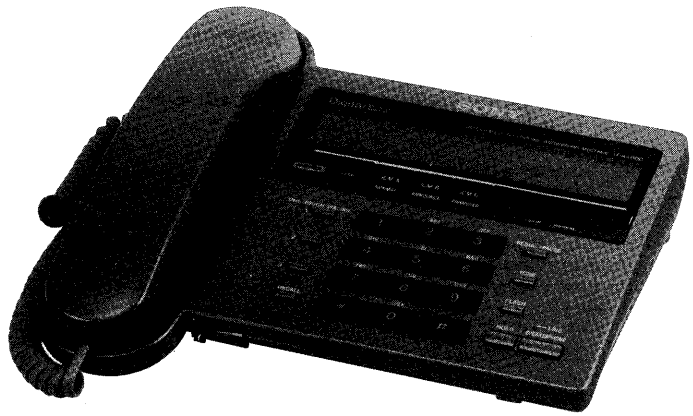
IT-A4000

SERVICE MANUAL

US Model
Tourist Model



SPECIFICATIONS

Power consumption	Approx. 5.4W (max.) Approx. 4W (in ANSWER mode)
Outgoing message Incoming message Memo message Conversation in progress	Recorded in incorporated IC, up to 16 minutes
Power source	9V DC (via supplied AC power adaptor AC-T36)
Dial signal	Tone, pulse (10/20) selectable
Dimensions	Approx. 235 × 214.5 × 66.2 mm (w/h/d) (Approx. 9 3/8 × 8 1/2 × 2 5/8 inches)
Weight	Approx. 950 g (including attachments) (Approx. 2lb 1.2oz)
Supplied accessories	Connecting line cord (1) AC power adaptor (1) Alkaline batteries (4) Wall bracket and screws (1 set) Directory (1) Operating instructions (1)

Design and specifications subject to change without notice.

INTEGRATED TELEPHONE ANSWERING MACHINE

SONY®

Owner's record	The model and serial numbers are located at the bottom of the phone. Record the serial number in the space provided below. Refer to these numbers whenever you call upon your Sony dealer regarding this product. Model No. IT-A4000 Serial No._____

Warning	To prevent fire or shock hazard, do not expose the set to rain or moisture. To avoid electrical shock, do not open the cabinet. Refer servicing to qualified personnel only.

Caution	Be sure to put alkaline batteries into your telephone before you use it; otherwise, all the programmed data will be erased if a power interruption occurs.

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Notes on chip component replacement

- Never reuse a disconnected chip component.
- Notice that the minus side of a tantalum capacitor may be damaged by heat.

Flexible Circuit Board Repairing

- Keep the temperature of the soldering iron around 270°C during repairing.
- Do not touch the soldering iron on the same conductor of the circuit board (within 3 times).
- Be careful not to apply force on the conductor when soldering or unsoldering.

SAFETY-RELATED COMPONENT WARNING!!

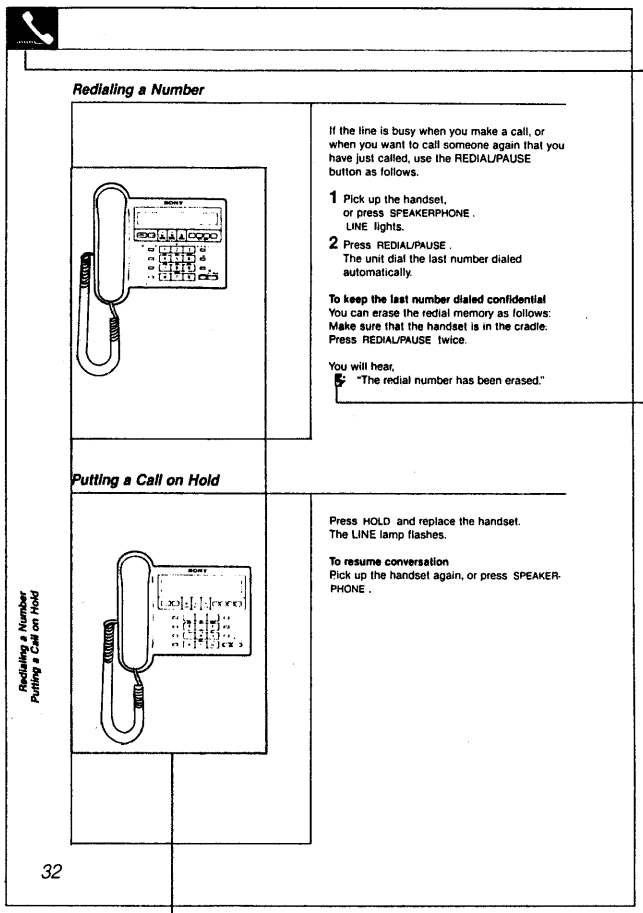
COMPONENTS IDENTIFIED BY MARK ⚠ OR DOTTED LINE WITH MARK ⚠ ON THE SCHEMATIC DIAGRAMS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.

SECTION 1
GENERAL

This section is extracted from instruction manual.

How to use this manual

The following is the standard page layout of this manual.


Redialing a Number
If the line is busy when you make a call, or when you want to call someone again that you have just called, use the REDIAL/PAUSE button as follows.
1 Pick up the handset, or press SPEAKERPHONE. LINE lights.
2 Press REDIAL/PAUSE. The unit dial the last number dialed automatically.
To keep the last number dialed confidential
You can erase the redial memory as follows:
Make sure that the handset is in the cradle.
Press REDIAL/PAUSE twice.
You will hear,
"The redial number has been erased."
Putting a Call on Hold
Press HOLD and replace the handset. The LINE lamp flashes.
To resume conversation
Pick up the handset again, or press SPEAKERPHONE.
Redialing a Number
Putting a Call on Hold
32

The pages with these marks contain the explanations of:

- Telephone answering machine
- Remote control functions
- Normal telephone functions

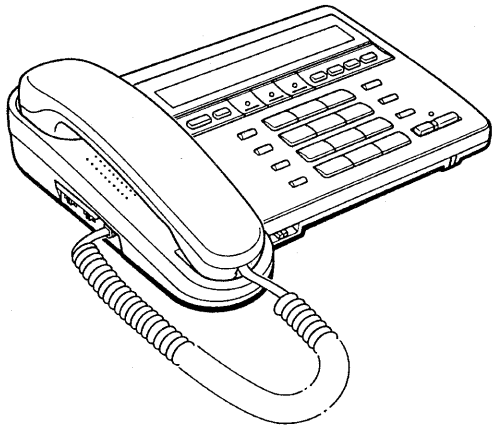
This unit has a voice guidance. Follow the guidance to operate this unit. In this manual, phrases in quotation marks following the mark will be announced by the unit.

Note on voice guidance
Make sure to carry out the operation after listening to the guidance.

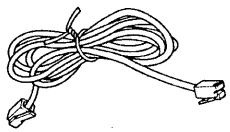
This area shows the operating steps and the buttons and/or keys to be used.

What You Get with Your Unit

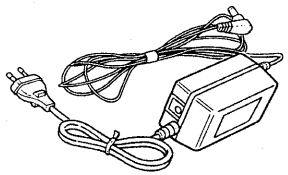
Telephone and handset



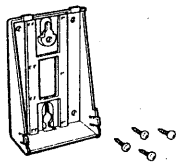
Connecting line cord



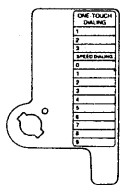
AC power adaptor (AC-T36)



Wall mounting bracket and screws

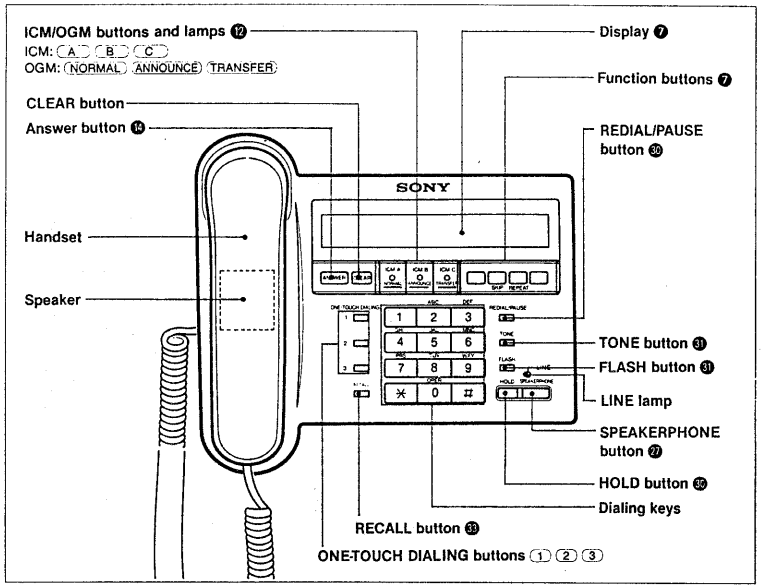


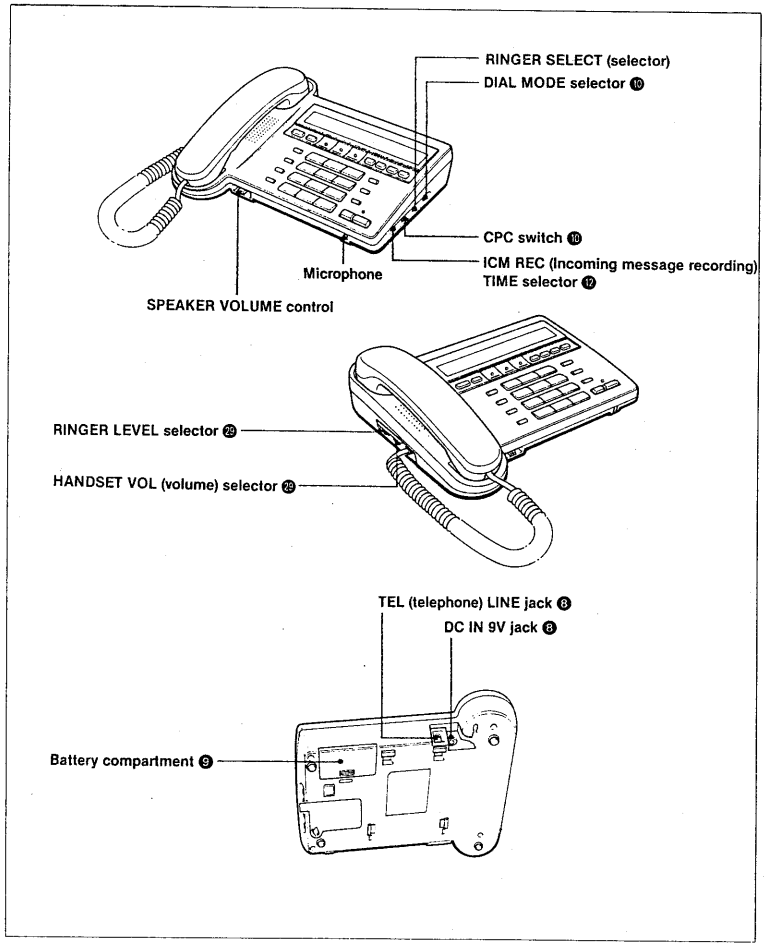
Directory



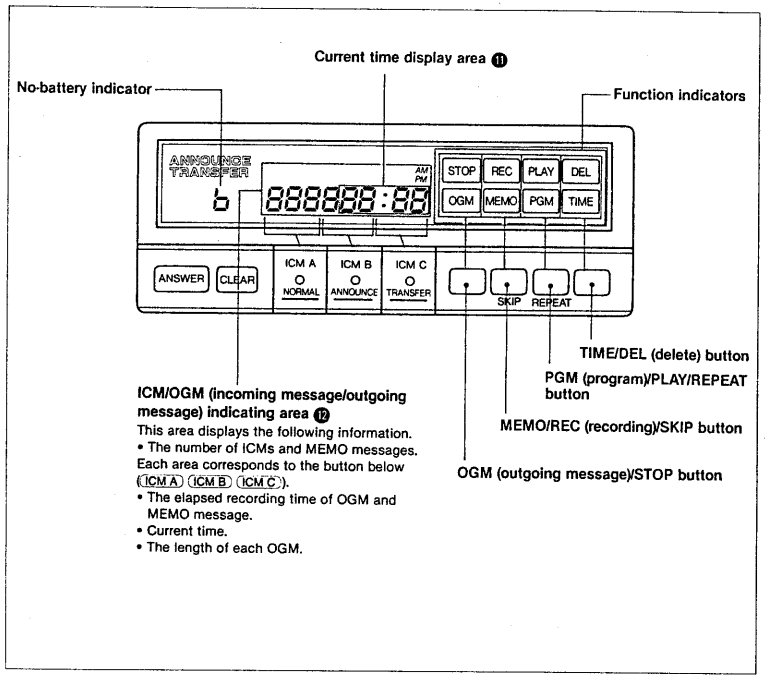
Looking at Your Phone

See the pages in ● for reference.



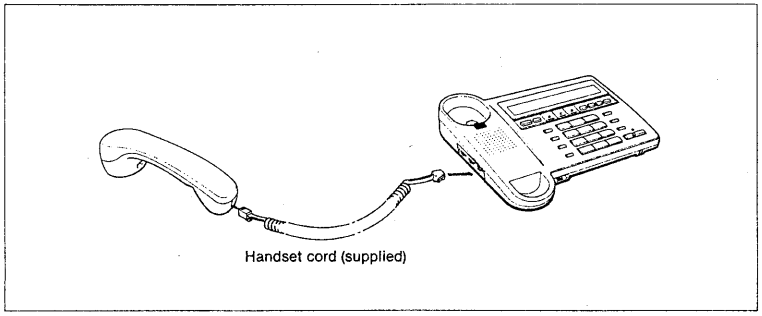

RINGER SELECT (selector)
DIAL MODE selector ⑯
CPC switch ⑱
ICM REC (Incoming message recording) TIME selector ⑰
Microphone
SPEAKER VOLUME control
RINGER LEVEL selector ㉖
HANDSET VOL (volume) selector ㉕
TEL (telephone) LINE jack ㉔
DC IN 9V jack ㉓
Battery compartment ⑨

Display

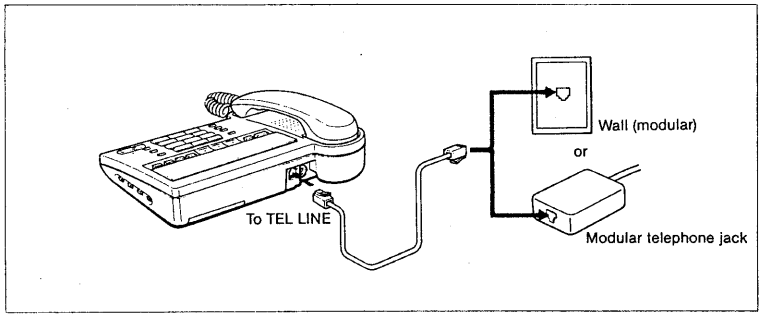

Current time display area ⑪
No-battery indicator
Function indicators
ANNOUNCE
TRANSFER
AM
PM
STOP
REC
PLAY
DEL
OGM
MEMO
PGM
TIME
ANSWER
CLEAR
ICM A
ICM B
ICM C
NORMAL
ANNOUNCE
TRANSFER
SKIP
REPEAT
TIME/DEL (delete) button
PGM (program)/PLAY/REPEAT button
MEMO/REC (recording)/SKIP button
OGM (outgoing message)/STOP button
ICM/OGM (incoming message/outgoing message) indicating area ⑫
This area displays the following information.
• The number of ICMs and MEMO messages. Each area corresponds to the button below (ICM A) (ICM B) (ICM C).
• The elapsed recording time of OGM and MEMO message.
• Current time.
• The length of each OGM.

Setting Up the Unit

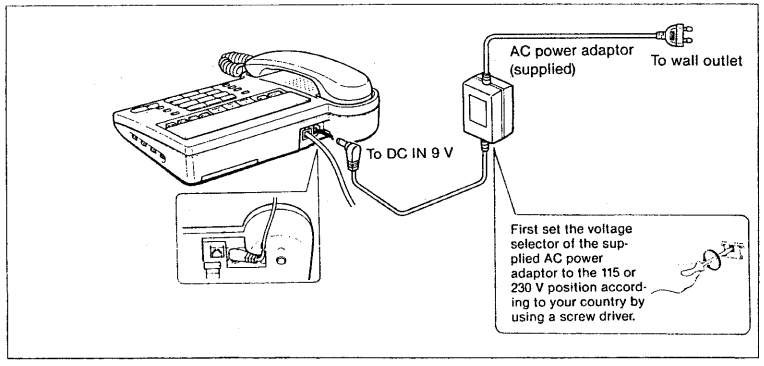
1 Corded Handset Connection



2 Telephone Line Connection



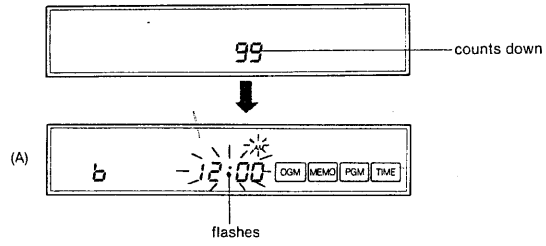
3 Power Connection


AC power adaptor (supplied)
To wall outlet
To DC IN 9 V
First set the voltage selector of the supplied AC power adaptor to the 115 or 230 V position according to your country by using a screw driver.

When you connect the supplied AC power adaptor as illustrated above

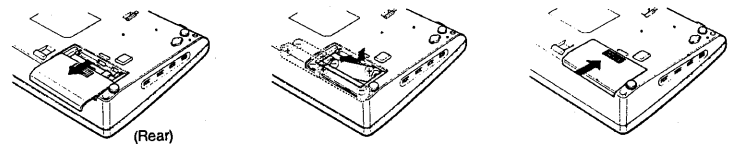
"Please wait one moment."

The indication in the display counts down from 99 until the unit gets ready. (You can not operate this unit during the count down.)



4 Installing Batteries for Memory Backup and Dialing Backup

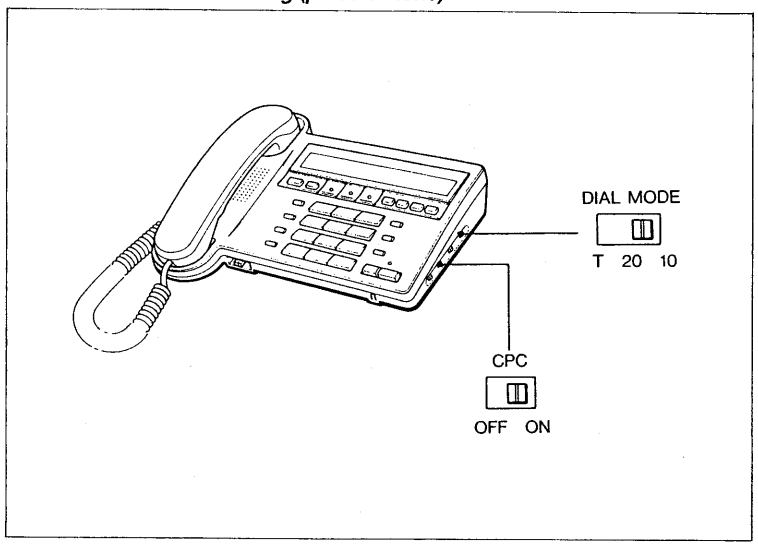
Insert 4 size AA (R6) batteries.



Notes

- Use only the supplied AC power adaptor.
- If your telephone outlet is not a modular type, you need to modify it. Please contact your telephone company for assistance.
- If the unit does not work even though the AC power adaptor is connected to a wall outlet, disconnect it, and after a few moments, reconnect it firmly.
- Change batteries regularly at least once a year. If you use the unit without batteries or if batteries are weak, all programmed data will be erased and the telephone answering function will not activate when a power interruption occurs. If all data are erased, the display (A) in step 3 appears.
- When batteries are fully charged, they last for 1 hour (when alkaline batteries are used) as backup during a power interruption.
- Do not disconnect the AC power adaptor while changing batteries, or all the memories will be erased.
- Be sure to put alkaline batteries into your telephone before you use it; otherwise, all the programmed data will be erased if a power interruption occurs.

DIAL MODE Selector Setting (pulse or tone)



If you do not know whether your telephone service is pulse or tone, find out by the steps below. The selector is preset to 10.

1 Confirm that the DIAL MODE selector on the right side of the unit is set to 10.

2 Make a trial call.
If the call is connected, you have pulse dial service. Go to step 3.
If not connected, you have tone service. Set the DIAL MODE selector to T.

3 Set the DIAL MODE selector to 20 and make a trial call.
If the call is connected, you have 20 pulse dial service.
If not connected, you have 10 pulse dial service. Set the selector to 10.

Setting the CPC Switch

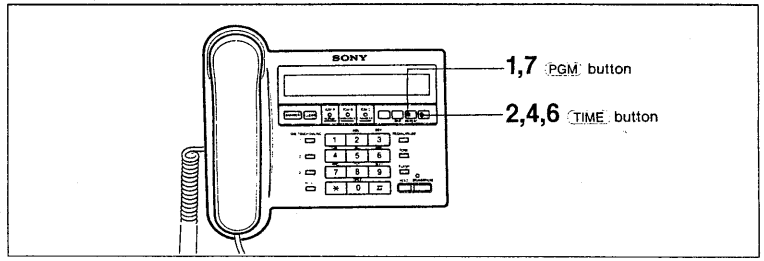
The CPC switch (see the illustration above) is useful to maximize the message recovering time available. Whenever the unit senses the hang-up click, the unit stops recording.
ON: To let the unit sense the hang-up click and stop recording the message.
OFF: Not to let the unit sense the hang-up click. In this case, a tone may be recorded after the caller stops talking.

Note

If you subscribe to "call waiting service," set the CPC switch to OFF. If set to ON, your caller may be cut off midway through recording his/her message if another call comes in.

Setting the Current Time

Set the current day of the week and the time before using this unit. Once you set them, the unit records the day and time of each incoming message.



1 Press (PGM).
2 Press (TIME).
"Enter 1 for Sunday, 2 for Monday, etc."
3 The keys (1) – (7) correspond to the days of the week as follows. Press the appropriate key.
(1) Sunday (2) Monday (3) Tuesday (4) Wednesday (5) Thursday (6) Friday (7) Saturday
"Saturday", if you pressed (7).
If you pressed the wrong key, press the correct key.

4 Press (TIME).
"Enter the time."
5 Press the dialing keys according to the current time.
For single digit hour, be sure to press (0) first.

[Example]
Current time 6:45 PM
The keys to press (0) (6) (4) (5)

6 Press (TIME).
"Enter 1 for AM, 2 for PM."
If you pressed the wrong key, press the other correct key.
7 Press (PGM).
The unit announces the day of the week and the time of your setting.
[Example] "Saturday, six forty five, pm."
If there was something wrong with your operation, the unit announces, "The operation is incorrect." Start again from the beginning.

To check the current time
Press (TIME).
The present day of the week and the time will be announced.

Notes

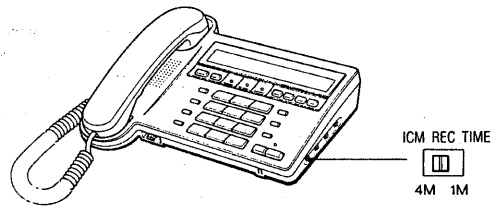
- Make sure the handset is on the hook.
- If you have made an error and need to start over, press (CLEAR).
- If you pause for 20 seconds at any time during a setting sequence, all settings will be canceled. Start again from the beginning.
- If you have not programmed the current time and press (TIME), the unit announces, "Sunday, 12:00 AM."

Using as a Telephone Answering Machine

This unit has three different kinds of answering modes. You can choose the function by pressing the corresponding ICM/OGM button.

ICM/OGM Button	Mode and Function
NORMAL	Normal answer mode. The unit answers and records the incoming message.
ANNOUNCE	Answer only mode. The unit answers the incoming call, but no messages will be recorded.
TRANSFER	Transfer mode. The unit calls a pre-programmed number to forward recorded messages. On transfer mode, see the section "Message Transfer" (page 23) for details.

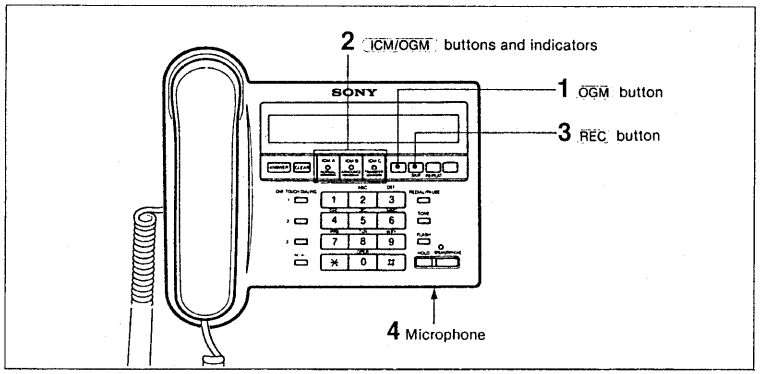
For normal answering machine operation, select the recording time of the incoming message first using the ICM REC TIME selector.



Selector setting	Description
4M	Allows up to 4 minutes per message.
1M	Allows up to 1 minute per message.

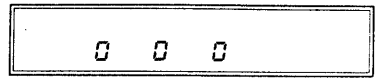
Recording Your Outgoing Message (OGM)

To use the answering function, the unit must have outgoing messages (OGM). To record your messages, follow the steps in next page.



1 Press (OGM).
All the ICM/OGM indicators light.
In the display, each ICM/OGM indicating area shows you the length of the message you are recording.
When no OGM is recorded, the display will be as follows.

Example:



2 Press the ICM/OGM button (NORMAL or (ANNOUNCE)) for which you want to record your outgoing message.

3 Press (REC).
"You may record outgoing message. Start after the tone."

4 Speak into the microphone.
The elapsed recording time appears in the corresponding display area.

On OGM recording time

- For (NORMAL) or (ANNOUNCE), you can record messages as long as there is room in memory. If the recording extends beyond 99 seconds, the number "99" will flash in the display.
- Note that the OGM messages and ICM messages are recorded in the same area. The total recording time is 16 minutes. As the OGM message gets longer, the recording area for ICM messages becomes shorter.

If the memory gets full, the following display appears, and the recorded messages will be played back.

To playback your OGM
Start from step 1, and press (PLAY) at step 3 instead of (REC).

To erase your OGM
Start from step 1, and press (DEL) at step 3 instead of (REC).

Note

Make sure to erase the message first before you record a new one. You cannot directly overwrite an existing OGM message.

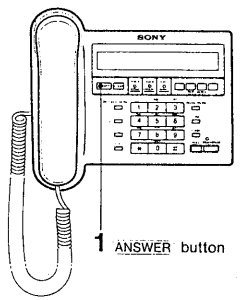
On Prerecorded messages

Each area has prerecorded outgoing messages as shown in the following table.

Function	Prerecorded messages
NORMAL	Hello, I'm unable to answer your call right now. Please leave your name, number and messages after the tone.
ANNOUNCE	Hello, I'm unable to answer your call right now. Please call again. Thank you.

If you do not record your own messages, the unit will automatically use the above messages.

Setting the Answering Mode



NORMAL answer phone mode

1 Press (ANSWER).
The ANSWER button lights.
The unit is in the NORMAL answer mode.

To turn off the NORMAL answer mode
Press (ANSWER) again.

Notes

- If the memory storage becomes full when recording the incoming message in the normal answer mode, the unit automatically enters the announce only mode. In the display, the "FULL" indication appears.
- If you press (ANSWER) when the memory is already full, you will hear,
  "No message will be recorded. Please erase messages." Erase the message at first (see page 17).

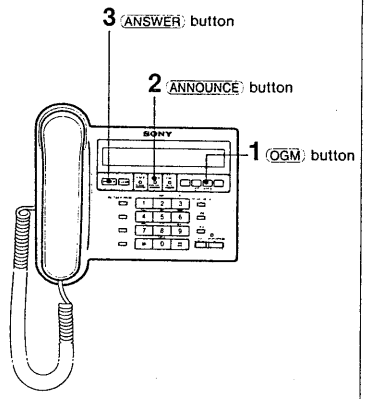
Separating incoming messages

When more than one person receives messages on this unit, you can separate the ICMs to three memory area segments by using this function.
If the caller follows the steps below, the messages will be recorded in the desired memory area. To use this function, you must include the directions for the caller in your outgoing message.
This function is available only when the caller uses a pushbutton (touch-tone) phone.
The caller must carry out the following operation either during:

- listening to the (NORMAL) message.
- during, or at the end of his/her message.

To record the message in:	Press:
ICM A	(*) (1)
ICM B	(*) (2)
ICM C	(*) (3)

Example OGM: "If you would like to leave a message for John, press (*) (1) before your message. To leave a message for Jane, press (*) (2). For Judy, press (*) (3)."



ANNOUNCE only mode

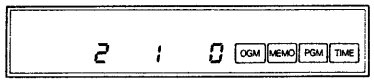
1 Press (OGM).
2 Press (ANNOUNCE).
3 Press (ANSWER).
ANNOUNCE indication appears in the display.

To turn off the ANNOUNCE only mode
Press (ANSWER) again.

Message counter

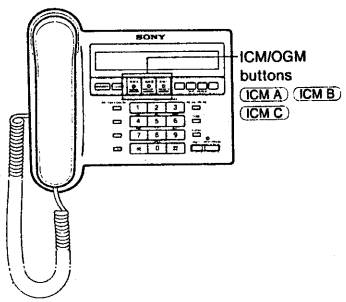
If any messages are recorded, the OGM/ICM indication flashes and the corresponding area in the display shows the number of messages. Once the unit plays back all the messages in the area, the flash stops.

Example:



In the example display above, you have 2 messages in the (ICM A) area, and 1 message in the (ICM B) area.

Playing Back Incoming Messages (ICMs)



1 Press one of the ICM/OGM buttons.
The unit plays back the recorded message. After each recorded message, the unit will announce the day of the week and time of recording.
If no messages are recorded in the chosen area, you will hear,
"You have no messages."

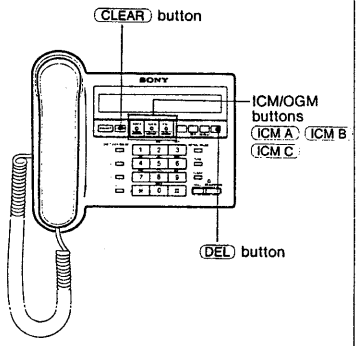
To repeat the current message
Press (REPEAT) during playback.

Notes

- The unit will not announce the day and time of recording if you did not set the current day and time. (See page 11 for setting procedures.)
- If you press (REPEAT) within 2 seconds of the beginning of the current message, playback resumes from the beginning of the previous message.

To skip a message
Press (SKIP). The unit stops playing back the current message and starts playing back the next one.

To stop playing back
Press (STOP) or (CLEAR) during playback.



Erasing messages one at a time

You can erase each message while playing it back.

1 Press one of the ICM/OGM buttons to playback the incoming messages.

2 Press (DEL) **during** playback.
"I'll erase this message."
After the erasure, the unit plays back the next message.

(DEL) flashes at the end of the playback.
No operation is possible while (DEL) flashes.

Erasing all messages

In this operation, all messages in the message area will be erased at once. Make sure you have heard all the messages before erasing.

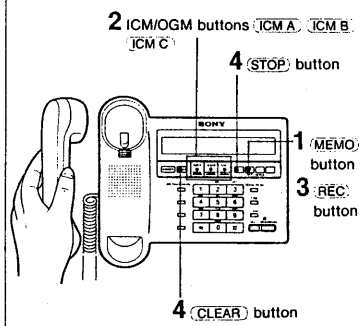
1 Press (CLEAR) and one of the ICM/OGM buttons.
"I'll erase all of your incoming messages."
(DEL) indication flashes in the display.

Example:
If you want to erase all the messages recorded in the ICM A area, press (CLEAR) and (ICM A).

Notes

- If you try to erase a message that has not been played back, you will hear, "Please playback the messages."
  Playback the messages first before erasing them.
- You cannot carry on any operation while (DEL) flashes.

Recording a Conversation in Progress



While you are talking on the phone, you can record the conversation by pressing MEMO as follows. You cannot record a conversation if you are talking through the speakerphone.

1 Press MEMO while talking.
All the ICM/OGM lamps light.

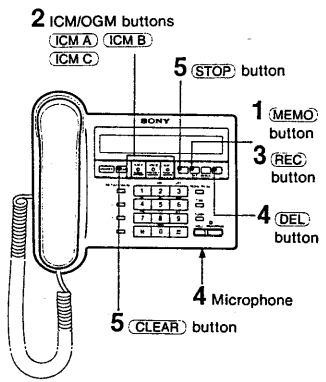
2 Press one of the ICM/OGM buttons (A, B or C) that you want to record the conversation on.

3 Press REC.
Recording starts.

4 To stop recording, press STOP or CLEAR.
The recorded conversation will be counted as an incoming message.

To play back a recorded conversation
Press one of the ICM/OGM buttons which you pressed in step 2 (A, B or C).
The unit plays back the recorded conversation.

Recording a Memo Message



A memo message allows you to leave messages for other users of this unit.

1 Press MEMO.
ICM/OGM indicators in the display show you the number of the messages already recorded in the area.

2 Press the ICM/OGM button (A, B or C) of your choice.
The number of the messages recorded in the area and the REC indication appear in the display.

3 Press REC.
"You may record a memo message. Start after the tone."
A short beep sounds.

4 Speak into the microphone.
If you make a mistake, press DEL and start from step 1.

5 Press STOP or CLEAR at the end or your message.

If you want to cancel recording
Press DEL.

To play back the memo message
Press one of the ICM/OGM buttons which you pressed in step 2 (A, B or C).
The unit plays back the recorded memo message.

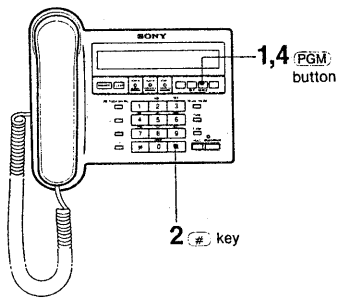
To erase the memo message
Follow the same steps as "Erasing message one at a time" or "Erasing all messages" (see page 17).

Remote Control Functions

Remote control operations allow you to perform the following functions from any pushbutton (touch-tone) phone.

- Play back ICM and MEMO messages (including skip and repeat operation).
- Erase the messages.
- Record an OGM.
- Set the unit into the transfer mode.
- Enter and quit the normal answer mode.

Programming your security code



For remote control operation, you must program a three-digit security code. Follow the steps below to program the code.

1 Press PGM.
2 Press #.
3 Press three digits number of your choice.
4 Press PGM.

Remote Operation

1 Call your phone from a pushbutton phone.
2 While the unit is answering, press # twice. The playback of the OGM stops. If the playback continues, press # until it stops.
3 Make sure that the OGM has stopped, then enter your security code.

Example:
When your security code is 555, enter # #, then 5 5 5.

If the code is correct, you will hear
"Security code accepted. Please enter # 2 # for playback, etc."

If the code is incorrect, you will hear
"The security code is incorrect. Please enter again."
When the caller enters an incorrect code more than three times, the unit disconnects the line.

4 Enter the control codes referring to the table below.
After each operation, you will hear "End of operation. Please enter a control code."

If the command is incorrect, you will hear "The control code is incorrect. Please enter again."

Notes

- If you enter the wrong command three times, the line will be disconnected.
- If you leave the unit for 20 seconds without entering a new command, the line will be disconnected.
- If you leave more than 2 seconds between pressing the keys, the unit cancels the previous input. Start again from step 2.
- If nothing occurs even when you enter the control code, re-enter the code until you hear any announce from the unit.

Description of Control Codes for Remote Operation

To: (function)	Press:
To repeat the message	# 1 #
To play back the messages recorded in area A	# 2 #
To play back the messages recorded in area A	# 2 1
To play back the messages recorded in area B	# 2 2
To play back the messages recorded in area C	# 2 3
To skip to the beginning of the next message	# 3 #
To erase the messages recorded in area A	# 4 #
To erase the messages recorded in area A	# 4 1
To erase the messages recorded in area B	# 4 2
To erase the messages recorded in area C	# 4 3
To set the unit to transfer mode	# 7 #
To program the number to which messages are transferred (see "Note" below)	# 9 #
To turn off answer mode	# 0 #
To erase the OGM recorded in NORMAL	* 4 *
To erase the OGM recorded in ANNOUNCE	* 5 *
To play back the OGM recorded in NORMAL	* 6 *
To record the OGM for NORMAL	* 7 *
To play back the OGM recorded in ANNOUNCE	* 8 *
To record the OGM for ANNOUNCE	* 9 *
To set normal answer mode	* 0 *
To interrupt any of the above operations and wait for the next command	* *

Note on programming the number for message transfer

Enter the control code "# 9 #" not only before the new transfer telephone number, but also **after** the number. Unless you do this, the number will not be stored.

Example:

To save "234-5678" as your new transfer telephone number, press:
9
"Please enter the new telephone number after the tone."
2 3 4 5 6 7 8 # 9 #

Refer to the following table for storing various data in the telephone number sequence by remote operation:

To store	Enter
0-9	0 – 9
*	# 1
#	# 2
TONE	# 3
PAUSE	# 4

Setting the RINGER SELECT Switch (TOLL-SAVER)

The RINGER SELECT switch allows you to vary the number of rings before the unit answers to take a message.

Toll Saver allows you to determine if you have any messages by the number of rings before the unit answers when using the remote operation.

Set the RINGER SELECT switch according to the following table.

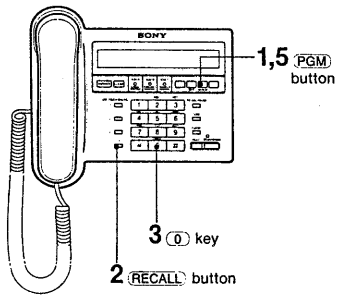
Selection of the switch	Description
3	The unit answers after 3 rings.
5	The unit answers after 5 rings.
TOLL SAVER (TS)	If any new (non-played back) messages are recorded, the unit answers after 3 rings. If no new messages are recorded, the unit answers after 5 rings. When calling to retrieve your messages remotely, you will know there are no new messages if the unit rings more than 3 times.

Message Transfer

Using this function, each time an incoming message is recorded, the unit will automatically dial the number to which the incoming message is to be transferred.

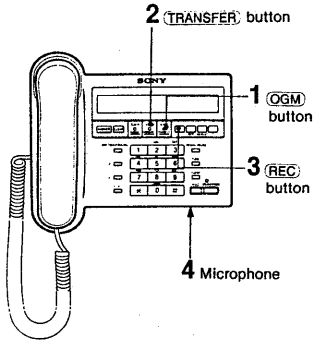
Programming the number a call is to be transferred to

Program the transfer telephone number in the (0) key of the speed dialing keys (see page 33).



1 Press (PGM).
2 Press (RECALL).
3 Press (0).
4 Dial the phone number you wish to program (up to 32 digits).
5 Press (PGM) again.

If you press the wrong button
Press (DEL) before step 5.
Then dial the number to be programmed again from the beginning.



Record your "Transfer message"

1 Press OGM.
2 Press TRANSFER.
3 Press REC.
"You may record outgoing message. Start after the tone."
4 Speak into the microphone.
The elapsed recording time appears in the corresponding display area.

Note

The maximum recording time for the transfer message is 10 seconds.

Example of greeting
"Hello, please call (Your name) to the phone. Thank you."

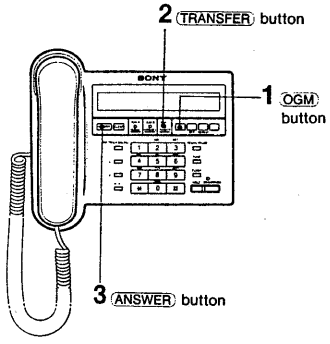
To playback your transfer message
Start from step 1, and press PLAY at step 3 instead of REC.

To erase your transfer message
Start from step 1, and press DEL at step 3 instead of REC.

Note

Make sure to erase the message first before you record a new one. You cannot directly overwrite an existing OGM message.

Pre-recorded transfer message
This unit has a prerecorded transfer message. If you do not record transfer message yourself, the unit will use the following message.
"A message has been transferred to this number. Please enter the security code."



To set the TRANSFER mode

1 Press OGM.
2 Press TRANSFER.
3 Press ANSWER.

Notes

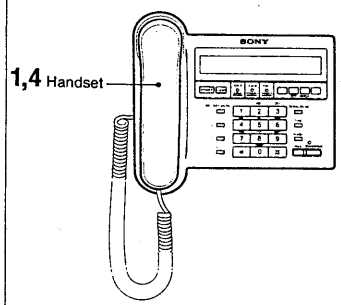
- Make sure the security code has been programmed (see page 20).
- Make sure the transfer telephone number has been programmed (see page 23).

To playback the transferred incoming message

1 You will answer the phone at the transferred number called from your unit.
2 While the unit is playing the transfer message, press # twice.
The playback of the message stops. If the playback continues, press # until it stops.
3 Make sure that the message stopped, then enter your security code.
4 Enter # 2 1 or # 2 2 or # 2 3. (See page 21 for the function of control code.)

Using as a Telephone

Making Calls



1 Pick up the handset.
Confirm the dial tone.

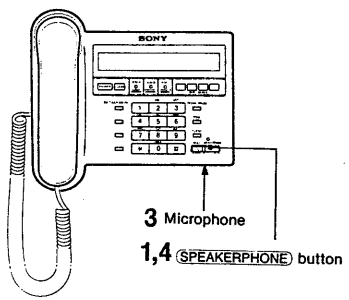
2 Dial the number.
As you press, each digit appears in the display.

3 Talk when your party answers.
You can check the approximate conversation time by watching the display. The timer starts to count about ten seconds after you dial the number.

4 Replace the handset in the cradle when finished.

Conversation time display
The conversation time changes as follows in the display.

0	Start.
1	1 second
⋮	
10	10 seconds
⋮	
1-01	1 minute 1 second
⋮	
1-00-00	1 hour



To make calls on SPEAKERPHONE (without picking up the handset)

1 Press (SPEAKERPHONE).

2 Dial the number.

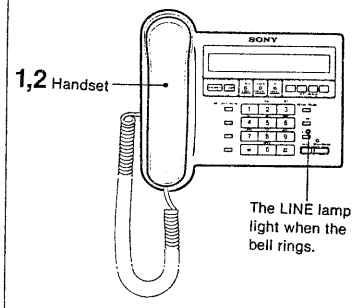
3 Speak into the microphone when your party answers.

4 Press (SPEAKERPHONE) when finished.

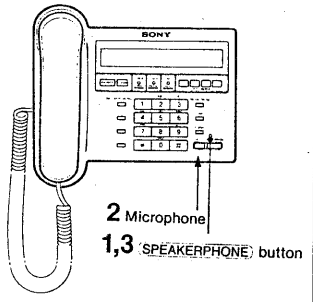
To switch from (SPEAKERPHONE) to handset during a call
Pick up the handset.

To switch from handset to SPEAKERPHONE
Press (SPEAKERPHONE), and then replace the handset in the cradle.

Receiving Calls

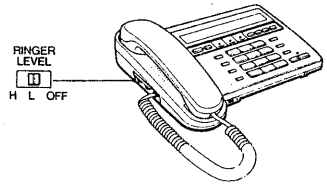


1 When you hear the ring, pick up the handset to answer.
2 When finished, replace the handset in the cradle to disconnect.



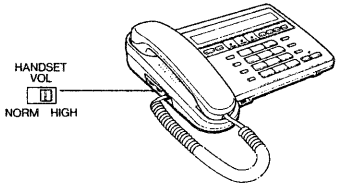
To receive calls on SPEAKERPHONE

1 When you hear the ring, press SPEAKERPHONE.
2 Speak into the microphone.
3 When finished, press SPEAKERPHONE again to disconnect.

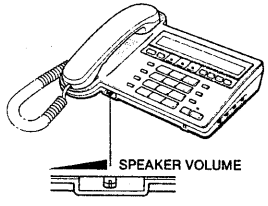


To adjust the ringer volume level
Select H (High), L (Low) or OFF on the RINGER LEVEL selector on the left side of the unit.

To adjust the volume of the handset
Select NORM or HIGH on the HANDSET VOL selector on the left side of the unit.



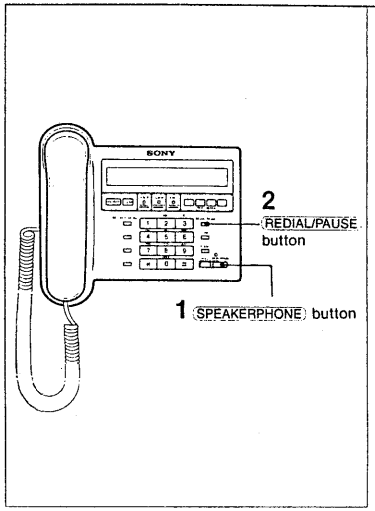
To adjust the volume of the speaker
Slide the SPEAKER VOLUME control on the front of the unit.



For the best speakerphone results

- You may not be able to hear the other person's voice in a noisy place. Use the speakerphone in a quiet room.
- Do not bring your hand or other object too close to the microphone. This will result in shrill noise (howling).
- When speaker volume is too loud, or the telephone has been placed close to a wall, you may find that the volume drops suddenly. This is due to a circuit in the telephone designed to protect against howling. In such cases, lower the volume slightly.

Redialing a Number



If the line is busy when you make a call, or when you want to call someone again that you have just called, use the REDIAL/PAUSE button as follows.

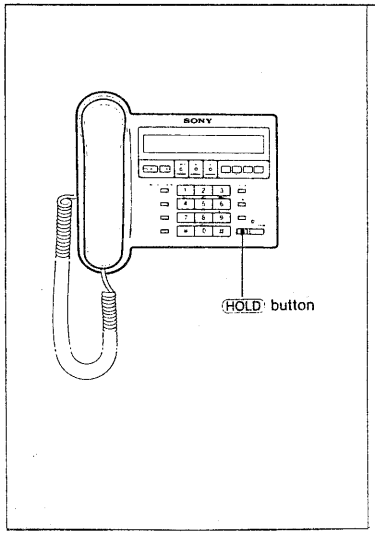
1 Pick up the handset, or press SPEAKERPHONE. LINE lights.

2 Press REDIAL/PAUSE. The unit dials the last number dialed automatically.

To keep the last number dialed confidential
You can erase the redial memory as follows:
Make sure that the handset is in the cradle.
Press REDIAL/PAUSE twice.

You will hear,
"The redial number has been erased."

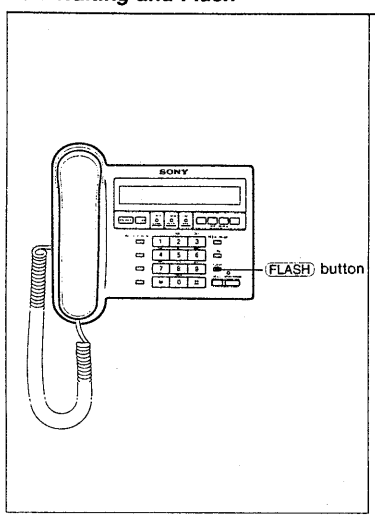
Putting a Call on Hold



Press HOLD and replace the handset.
The LINE lamp flashes.

To resume conversation
Pick up the handset again, or press SPEAKERPHONE.

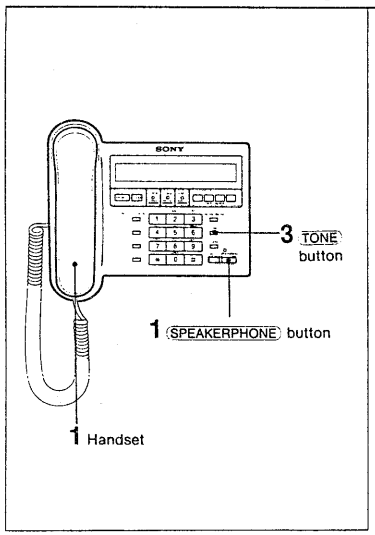
Call Waiting and Flash



1 If you subscribe to "call waiting service", press FLASH to switch from one party to another.

Note
If you do not have the call waiting service, the line will be disconnected if you press FLASH.

Using the TONE Button for Long-distance Service (For pulse-dial users)



Some services, such as MCI, Sprint and other alternative long-distance companies may require the distinct tones generated by a pushbutton (touch-tone) phone. If you have pulse-dial service, you can still access these services through a process called **"mixed dialing"**.

1 Pick up the handset, or press SPEAKERPHONE.

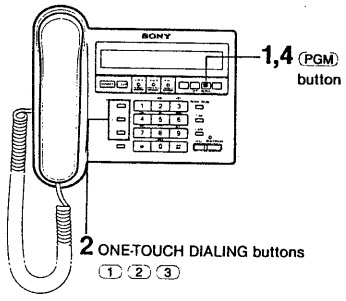
2 Dial the access number of the service you want to use.

3 After you are connected to the service, press TONE.
This operation allows your phone temporarily to emit tone signals.

4 Dial the long-distance number when instructed by the long- distance company.

Note
The TONE mode is canceled when you finish the call. You must press TONE each time you use "mixing dial".

Memory Dialing 1 (One-touch Dialing)



You can program the unit to automatically dial numbers you frequently call by using One-touch or Speed dialing.

One-touch Dialing

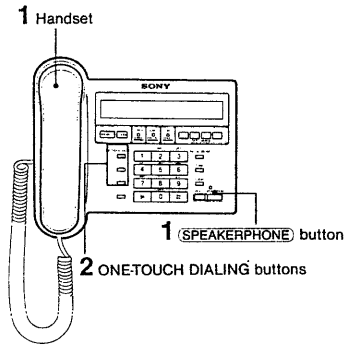
You can program three numbers with up to 20 digits each in the ONE-TOUCH DIALING buttons ((1) to (3)).

Programming numbers

1 Press (PGM) (program).
2 Select one of the ONE-TOUCH DIALING buttons ((1) to (3)).
3 Dial the phone number you wish to program (up to 20 digits).
4 Press (PGM) again.

If you press the wrong button

Press (DEL) before you press (PGM) in step 4, then start again from step 3.



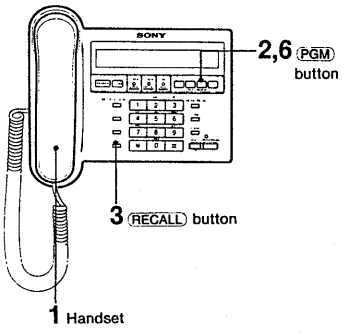
To change a programmed number

Program a new number using the procedure above.
The old number will be erased automatically.

To make a one-touch call

1 Pick up the handset, or press (SPEAKERPHONE).
2 Press the selected (ONE-TOUCH DIALING) button ((1) to (3)).
The programmed number appears in the display.
If the number is over twelve-digit, only the last twelve digits appear.

Memory Dialing 2 (Speed Dialing)



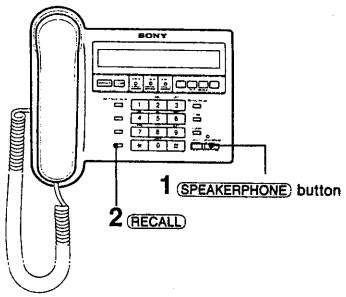
You can program up to 10 numbers into the dialing keys ((0) to (9)) of the unit.

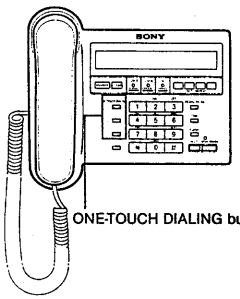
Programming numbers

The number programmed in the (0) key also serves as the number used in message transfer (see page 23).

1 Make sure the handset is in the cradle.
2 Press (PGM).
3 Press (RECALL).
4 Press the desired dialing key ((0) to (9)).
5 Dial the phone number you wish to program (up to 32 digits for (0), up to 20 digits for (1) to (9)).
6 Press (PGM).

To continue programming, repeat the steps 1 to 5.
You can program up to 10 different numbers.





To make a call using speed dialing

1 Pick up the handset, or press (SPEAKERPHONE).
2 Press (RECALL).
3 Press the dialing key for desired phone number.

Confirming phone numbers programmed into one-touch and speed dialing buttons

1 Press one of the ONE-TOUCH DIALING buttons (1), (2) or (3), or press speed dealing keys (0) to (9) after pressing (RECALL).

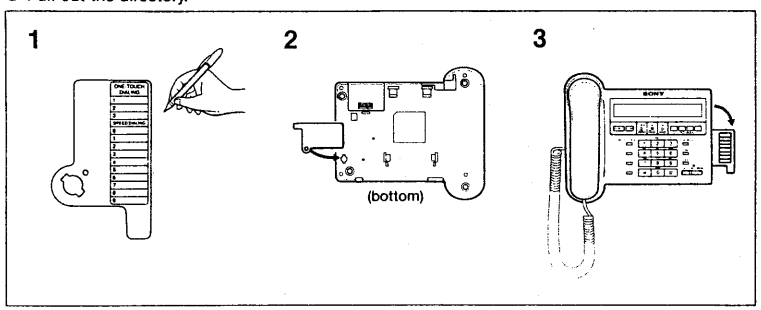
The programmed number appears in the display.
If no number is programmed, you will hear, "No number."

Notes

- You can program each one-touch dialing button and the dialing keys to dial a telephone number of up to 20 digits. If you enter a tone or pause, they will be counted as one digit.
  A number exceeding 20 digits will not be programmed.
- Do not let more than 20 seconds elapse between any two steps of the programming procedure.
- Use (REDIAL/PAUSE) button to program an automatic 4-second pause.

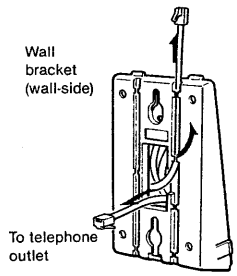
To keep a directory of what you programmed

1 Write down the name of the person or place whose number you programmed on the supplied directory.
2 Attach the directory on the bottom of the unit.
3 Pull out the directory.

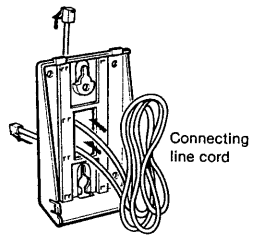


Mounting Your Phone on the Wall

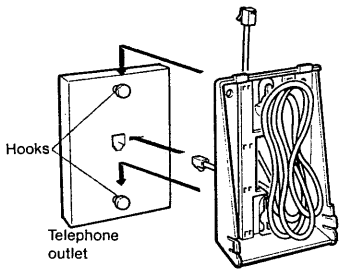
1



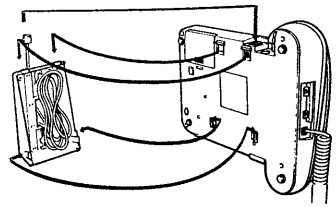
2 Coil the connecting line cord inside the wall bracket.



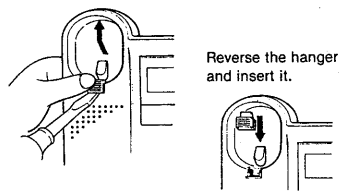
3 Hook the bracket to the telephone outlet.



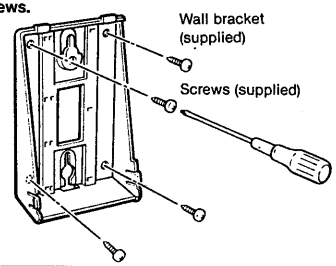
4 Align the installation hooks with the slots on the wall bracket. Insert telephone in the bracket and push down.



5 Raise the hanger for the handset to remove.



In step 3, if you cannot hook the bracket, attach it directly to the wall. Use the supplied screws.



SECTION 2
DESCRIPTION

2-1. Ringer

Connect modular jack MJ301 to the circuit. Circuit L1 and L2 are rectified at D302 via LF301, R280 and C280 through hook switch S301 (1/2) and relay RY301. The voltage of the rectified call signal is input to ringer IC (IC280), and the ringer tone is generated at the speaker.
D107 is the protective diode to prevent inputting irregular voltage to IC280. SG301 protects the circuit from inputting irregular voltage as the surge voltage.

2-2. Call : Handset

When you lift up the handset, S301 (1/2) and S302 (2/2) will operate. The voltage is input to D301 through S301 (1/2), and will rectify and reach R303 and Q301.
R303 is connected to the base of Q302 and sets it to HIGH.
Q301 becomes ON and the circuit voltage reaches speech network IC301. The speech network starts to transmit the voice signal to the handset and the handset microphone tone to the circuit.
D305 is the protective diode to prevent inputting irregular voltage to IC301.

2-3. Call : Speaker

When the speaker button is pressed, relay RY301 is set from the ringer side to the call side. The voltage is input to D301 through hook switch S301 and RY301 and will rectify and reach R303 and Q301. R303 is connected to the base of Q302 and sets it to HIGH.
Q301 becomes ON and the circuit voltage reaches speech network IC301. The output of speech network IC301 is amplified by IC401 (1/4) and the main amp IC403, and drives the speaker.
For voice transmission, the voice signal from the microphone is amplified by IC501 (1/2) and IC501 (2/2), input to speech network IC301 through CODEC IC (IC803), and transmitted to the circuit through Q301 and D301.

2-4. Dial : Handset Call

Dial comprises of two types : pulse and tone. The pulse type has 10pps. and 20pps. The dial type is preset by switch S840.
This dial differs when the telephone is connected to a commercial use power supply or not.

When the telephone is not connected to a commercial use power supply :

Dial : Pulse Dial

When you lift up the handset, you will hear the dial tone. If you press the dial keys of phone S920, S921, S922, S924, S925, S926, S927, S928, S929, S930, S931, and S932 when the power supply is cut off, dialer IC and the IC902 pulse signal outputs High, Low corresponding to the dial signal. This signal activates Q302 and Q301, intermits the circuit current and transmits the pulse signal.

Dial : Tone Dial

Pulse output of dialer IC maintains High and Q301 remains ON in tone type. If you press the dial key of the phone when the power supply is cut off, the tone signal is output from dialer IC (DTMF) output, input in the speech network MF input and transmitted to the circuit.

D922 is the protective diode to prevent inputting the irregular voltage to IC902.

When the telephone is connected to a commercial use power supply:

Dial : Pulse Dial

When you lift up the handset, you will hear the dial tone. If you press the dial keys of the phone S807, S808, S809, S813, S814, S815, S819, S820, S821, S825, S826 and S827 when the power supply is on, DP output signal of ASIC IC (IC802) outputs High, Low corresponding to the dial signal.

Dial : Tone Dial

DP output signal of ASIC IC maintains Low and Q301 remains ON in tone type. DTMF signal is generated by converting the digital signal from ASIC into the analog signal with CODEC IC (IC804). This signal is input into the speech network MF input.

2-5. Dial : Speaker Phone Call

When you press the speaker phone button, you will hear the dial tone. The same dial operation of the handset call when both the pulse dial and the tone dial are connected to a commercial use power supply, is conducted.

2-6. Hold

When you press the Hold button, IC806 and Hold output (12pin) becomes High, makes Q401, Q403 and Q420 ON, sets receiving and sending into Mute.

2-7. Answering Machine

2-7-1. Response message (OGM) recording

The signal from the microphone is converted into the digital signal by CODEC IC (IC803) after being amplifie by IC501, and goes to ASIC IC (IC802).

ACIC IC informs DSP.IC (IC801) of this signal and returns the signal to ASIC after signal compressing procedure in DSP.

This signal is recorded in DRAM.

2-7-2. Ringer signal detection and circuit transmission of the response message (OGM)

When you press the ANSWER button to set the answering machine, the button will light up. When the ringer signal is input from the circuit, the ringer signal reaches ringer IC and IC280 via S301 (1/2), RY301, LF301, R280 and C280 to make the speaker ring.

At the same time, photocoupler PH280 is driven. DSP IC (IC801) detects this output through buffer IC (IC805) ASIC IC (IC802). Relay RY301 and the circuit is closed after ringing for a fixed time.

When the fixed record OGM is recorded, DSP receives the data recorded in DRAM through ASIC IC, the data procedure is conducted, and returns to ASIC.

The digital data from ASIC is converted into the analog signal by CODEC IC (IC804).

The analog signal converted by CODEC is amplified, input to the speech network IC, MF input, and transmitted

to the circuit.

When the fixed record OGM is not recorded, data RCM IC823 for voice composition is converted into the analog signal by IC (IC822) for voice composition and playback. This signal amplified and input to the speech network IC, MF input, and transmitted to the circuit.

2-7-3. Recording message (ICM)

Start to record the ICM after transmitting to circuit OGM. The speech network output signal is amplified by IC401 (1/4), converted into the digital signal by CODEC IC (IC804). Further signal processing is identical to OGM recording.

2-7-4. ICM recording completion

The following three procedures complete ICM recording.

1. Call completion by the maximum recording time

Set the maximum recording time, one or four minutes, by the switch. When the ICM recording time exceeds, DSP IC releases the relay and the circuits using ASIC IC.

2. Call completion by CPC detection

If CPC is detected when CPC detection switch is ON, the call will be completed.

CPC signal is sent from the switchboard side when the sending side cuts off the call, photocoupler PH302 detects this signal. The signal from the photocoupler is informed to DSP via buffer IC, IC805, and ASI IC. DSP IC releases relay RY301 and the circuits using ASIC IC after recognized by DSP.

3. Call completion by detection of silence in the call

The digital signal converted by CODEC IC (IC804) in the recording ICM procedure is recognized silent in the call by DSP IC via ASIC IC (IC802).

DSP releases relay RY301 and the circuits using ASIC IC.

2-7-5. Remote control operation

When the answering machine is operating, various kind of remote control operations can be conducted by recognizing the tone signal from the same circuit. (Completion by detection of silence in the call.)

2-8. Function Descriptions

Telephone Function	Answering Machine Function	Other Functions
Dial	Message Record/Play/Erase	LCD display
Re-dial/Pause	Message Select Record/Play/Erase	Current time display
Re-dial clear	Message Skip/Repeat	Message number display
One touch dial (3 stations)	Message Save	OGM record time display
Abbreviated dial (10 stations)	Time stamp	Call time display
Mix dial	OGM (Answer/Full/Transmission)	Dial number display
Chain dial	Ready made OGM	Voice guidance
Tone	Automatic OGM switch (when full)	Memo record
Flash	Answer only	Call record
Speaker phone	Message transmission	External line remote control
Hold	Other party selection	Message Play/Erase
Automatic release of hold	Automatic release of answer (branch)	Message Skip/Repeat
Dial Mode Switch	Message interrupt	OGM Record/Play/Erase
Ring Volume Switch	Ringer Number Switch (T/3/5)	Set answering machine mode
(Large/Small/Off)	CPC (ON/OFF)	Set transmission mode
Call Volume Switch	Record Time Switch (1 minute/4	Automatic answer mode release
(Large/Standard)	minutes)	Phone number for transmission
Speaker Volume Switch	BUSY tone detect	register
Call, sending and receiving	Sound/Silent detect	
during power failure		

2-9. Feature Summary

Items	Description	Remarks
One touch dial (3 stations)	Maximum 20 digits/stations	
Abbreviated dial (1-9)	Maximum 20 digits/stations	
Abbreviated dial 0	Maximum 32 digits/stations	Combined use with phone number for transmission
Re-dial memory	32 digits	
Total record time	Approximately 16 minutes	1 MDRAM 10 pieces
OGM record	3 types	
Answer message	Maximum 16 minutes	
Full message	Maximum 16 minutes	
Transmission message	Maximum 10 seconds	
Ready made message OGM	3 types	Female voice
Answer message	×1	
Full message	×1	
Transmission message	×1	
Memo record time	Maximum 16 minutes	
Call record time	Maximum 16 minutes	During receiver call only
ICM record time	Maximum 4 minutes or 1 minute	Switching
ICM select record method		
ICM area 1	*1 input	Input while sending OGM or recording ICM
ICM area 2	*2 input	
ICM area 3	*3 input	
Method of call completion detect	VOX, BUSY 7 seconds each or CPC, Automatic release of hold	
Time stamp	Day of week/Time	Recording of record starting time
Transmission ringer number of times	Maximum 3 times	
	Immediately after, 30 minutes, 1 hour	
Transmission ringer time	50 seconds	
Other party answer confirmation method	# input	
Remote control security access number	3 digits ×1 type	
Dial mode	10/20/Tone	Switching
Ring volume	Large/Small/Off	Switching
Call volume	Standard/Large	Switching
Speaker volume	Continuous variability	
Call numbers	Toll saver/3 times/5 times	Switching
Battery life	Approximately 1 hour	When using alkali batteries

2-10. Hardware System

2-10-1. Digital Type

This unit does not incorporate a 4-bit micro computer such as the current model, but consists of system by setting the system control function to DSP (Digital Signal Processor) used for voice processing. ASIC is used for the mediation between DSP and all sorts of interface, the various type of controls are possible with two chips.

The role of IC which is used in IT-A4000 is described below.

DSP (Digital Signal Processor)(IC801)

DSP is the micro processor which can conduct high speed operation. Operates as a multi voice processing and system controller.

All sort of recording, play back (except for voice guidance),

DTMF detection, transmission, and VOX detection etc. are operated as voice processing.

ASIC(IC802)

ASIC operates to control DRAM and SRAM, interface key scan and all sorts of analog circuits.

ASIC also controls LCD driver and IC for voice guidance.

CODEC(IC803、804)

The Analog/Digital IO Processor converts the analog signal into the digital signal for voice signal processing by DSP.

Also converts the digital signal sent from DSP into the analog signal and transmits to the speaker and the circuit.

Two CODECs are used due to the speaker phone function.

SRAM(IC810)

SRAM is required at the high speeds of more than 85nsec.

The address which lacks DRAM bits, the message starting/ending address, time data, and dial numbers are recorded in SRAM.

DRAM (IC811 – 820)

Ten 1MDRAMs are used. DRAM which lacks bits are used for this unit. Called ARAM (Audio RAM), guarantees within 1% of bit lack rate.

LCD DRIVER(IC802)

This IC is 1/2 duty and enables the display of up to 106segment.

VOICE SYNTHESIZER (IC822, IC823)

Identical to the current unit. As this unit is for USA, the voice data is newly changed only for voice guide.

FLIP-FLOP (74HC374)(IC806)

Use as the output port to control the analog switch and LED.

General purpose logic 74HC374 is used.

BUS DRIVER (74HC244) (IC805,807)

Buffer to detect the key input and the input signal (to detect receiving etc.) from the circuit. General purpose logic 74HC244 is used.

2-10-2. Analog System and Telephone System

Main circuits are the speech network, dialer, ringer, receiving detection circuit, automatic hold releasing detection circuit, CPC detecting circuits, voice pass system, and power supply system circuit. As most of them are the diversion from the current unit, only the differences from the current one will be described here (refer to the circuit figure).

Dialer (IC902)

When the power supply is on, DSP conducts the dial transmission.

However, the dialer is set to operate while the power supply is cut off. Thus, the dialer basically is not necessary. The prime dialer is used due to the operation while the power supply is cut off.

Voltage Converter (IC103)

As IT-A4000 incorporates CODEC, a current of −5V is required.

Therefore, this unit uses Voltage Converter ICL7660.

2-11. Test Program Style

Enter the test mode by starting up the power supply by pressing TIME/DEL button and CLEAR button at the same time. LCD and LED are all lit after entering the test mode. This condition is defined as the test mode idle condition.

Only the following keys are active in the idle condition.

ICM button (A, B, C), Clear button

When the clear button is pressed in the idle condition, the unit exits the test mode and returns to the initial condition (RAM check is not necessary).

General operations are possible after returning to the initial condition.

When ICM button is pressed, the tests corresponding to each button can be conducted (Light off LCD and LED).

2-11-1. When ICM button A is pressed. ⟶ Confirm the key input and the switch input.

Every time the button is pressed, the key input sound will be emitted from the speaker.

When the switch is changed, the key input sound will be emitted from the speaker.

When the batteries are not inserted, "b" will be displayed at the left side on 7 segment row.

When the Clear button is pressed, the unit returns to the idle conditions.

2-11-2. When ICM button B is pressed. ⟶ Simple DRAM check .

20 pieces out of ARAM 1024 pieces are tested (approximately 2%).

Two of the right side on the 7 segment row are counted down promptly (1-16) (if the eighth ARARM makes the error, "7" will be displayed).

When the CLEAR button is pressed, the unit returns to the test idle mode condition.

2-11-3. When ICM button C is pressed. ——→ Check various kind of detection circuit.

Receive detect —→ "1" will be displayed at 12 digit of LCD.
HSOFHK detect —→ "2" will be displayed at 11 digit of LCD.
CPC detect —→ "3" will be displayed at 10 digit of LCD.
EXOFHK detect —→ "4" will be displayed at 9 digit of LCD.

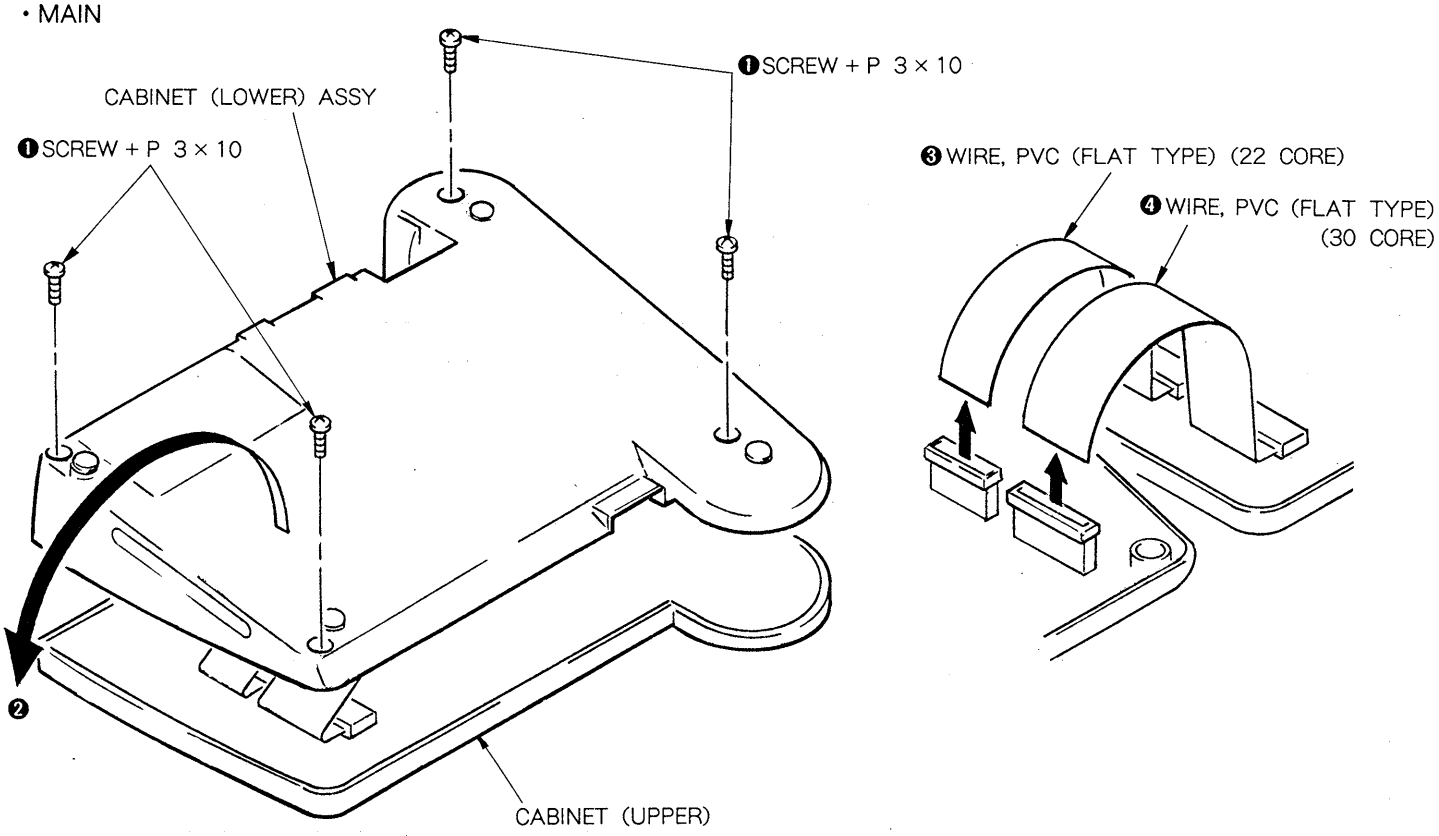
When the CLEAR button is pressed, the unit returns to the test idle mode.

When the above test mode is implemented, the check items are as follows.

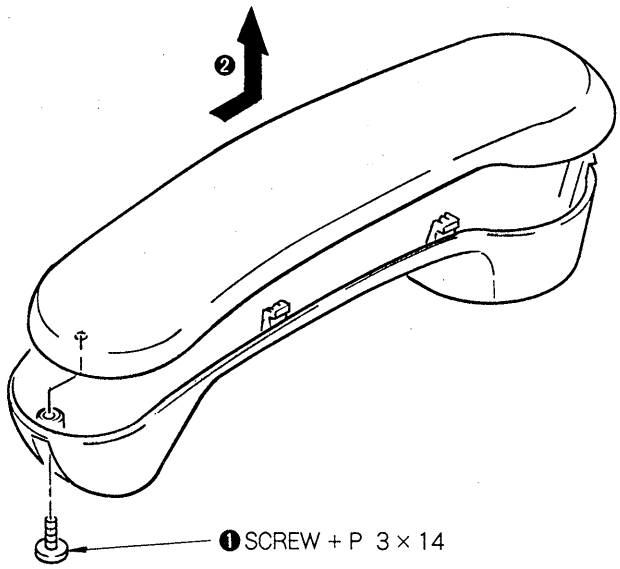
Ringer volume
Receive volume
Sending dial (10pps/20pps/TONE) {when the power supply is on or cut off}
Voice guide (register and confirm)
Speaker phone description (the same route as the microphone recording)

SECTION 3
DISASSEMBLY

• MAIN



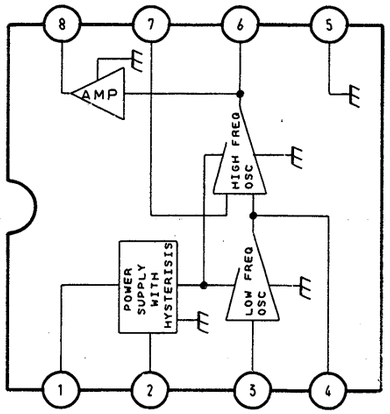
• HANDSET



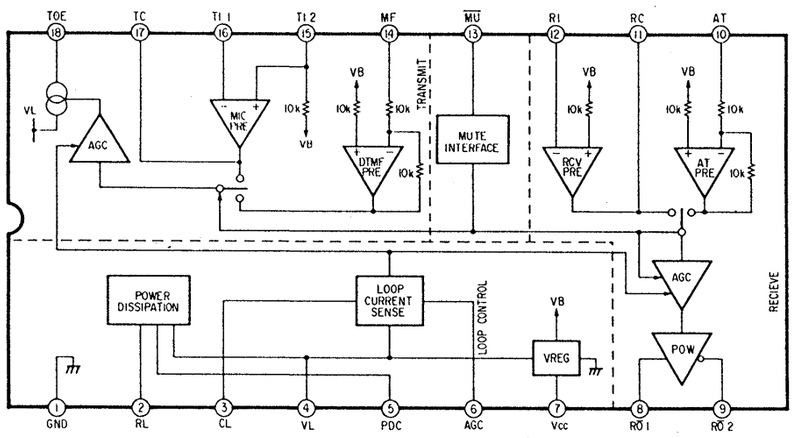
SECTION 4
DIAGRAMS

4-1. IC BLOCK DIAGRAMS

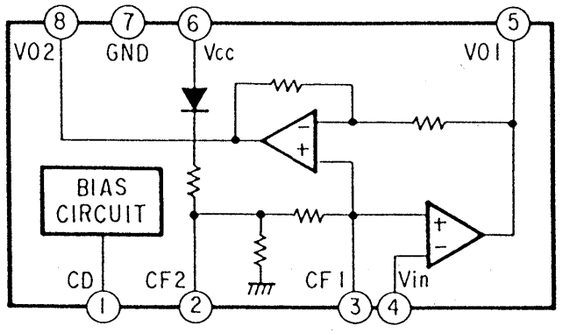
IC280 (HA16805F)



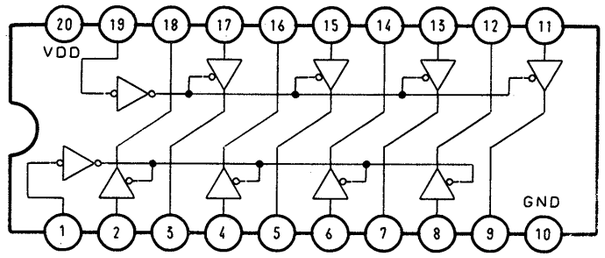
IC301 (BA6566)



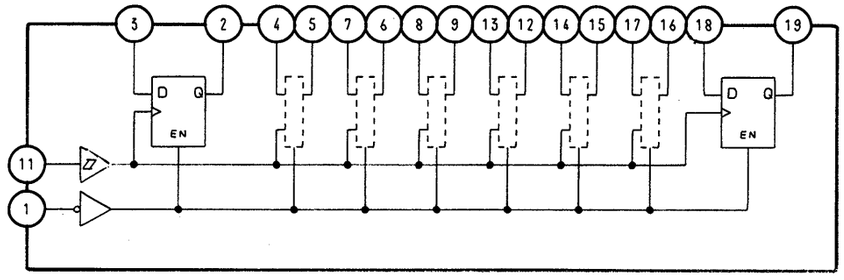
IC403 (MC34119-ML)



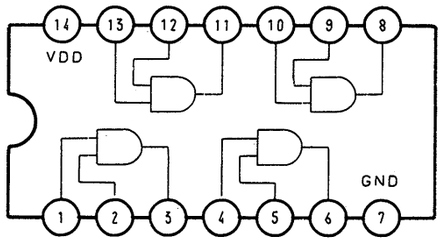
IC805, 807 (SN74HC244ANS)

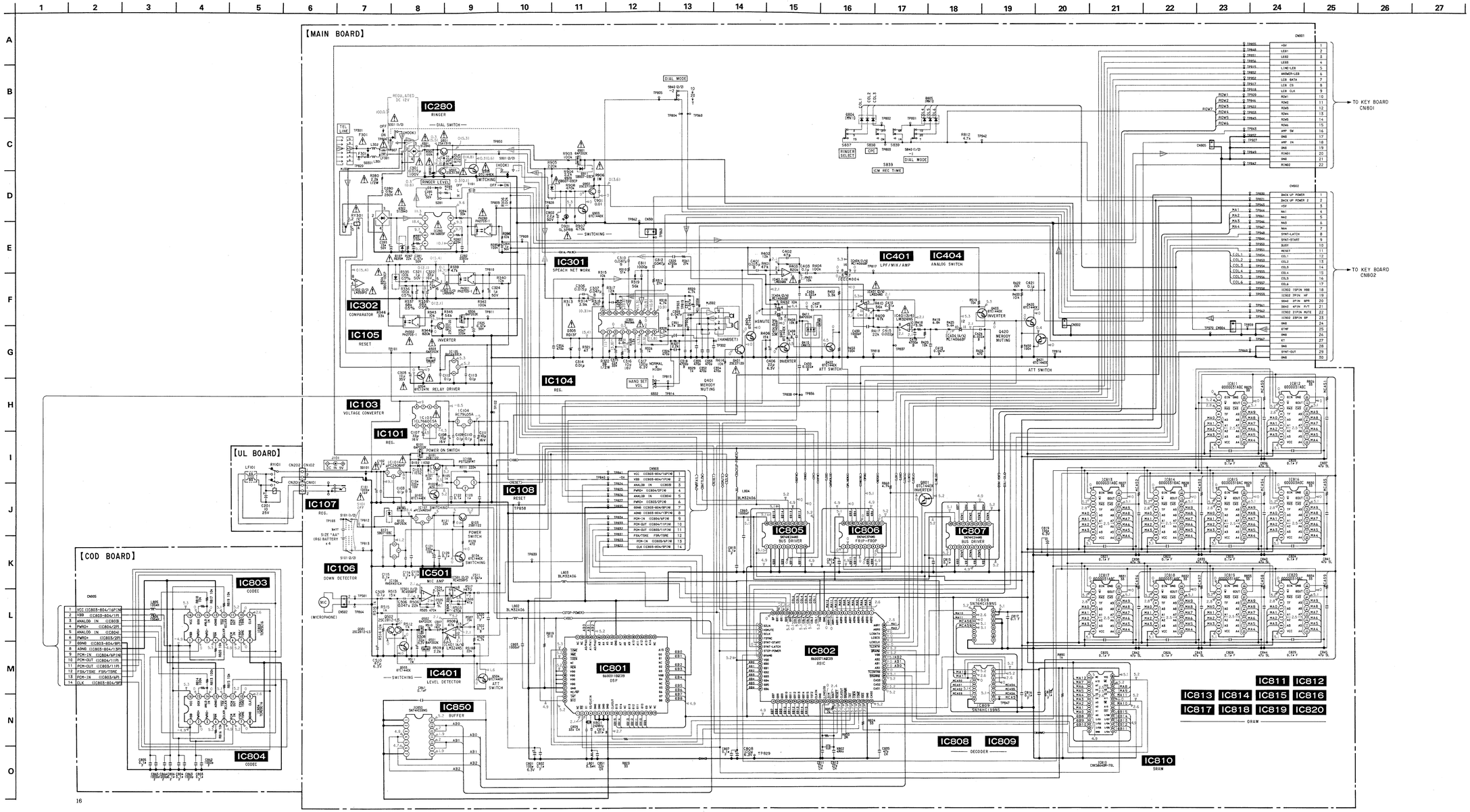


IC806 (SN74HC374ANS)



IC850 (SN74HC08ANS)





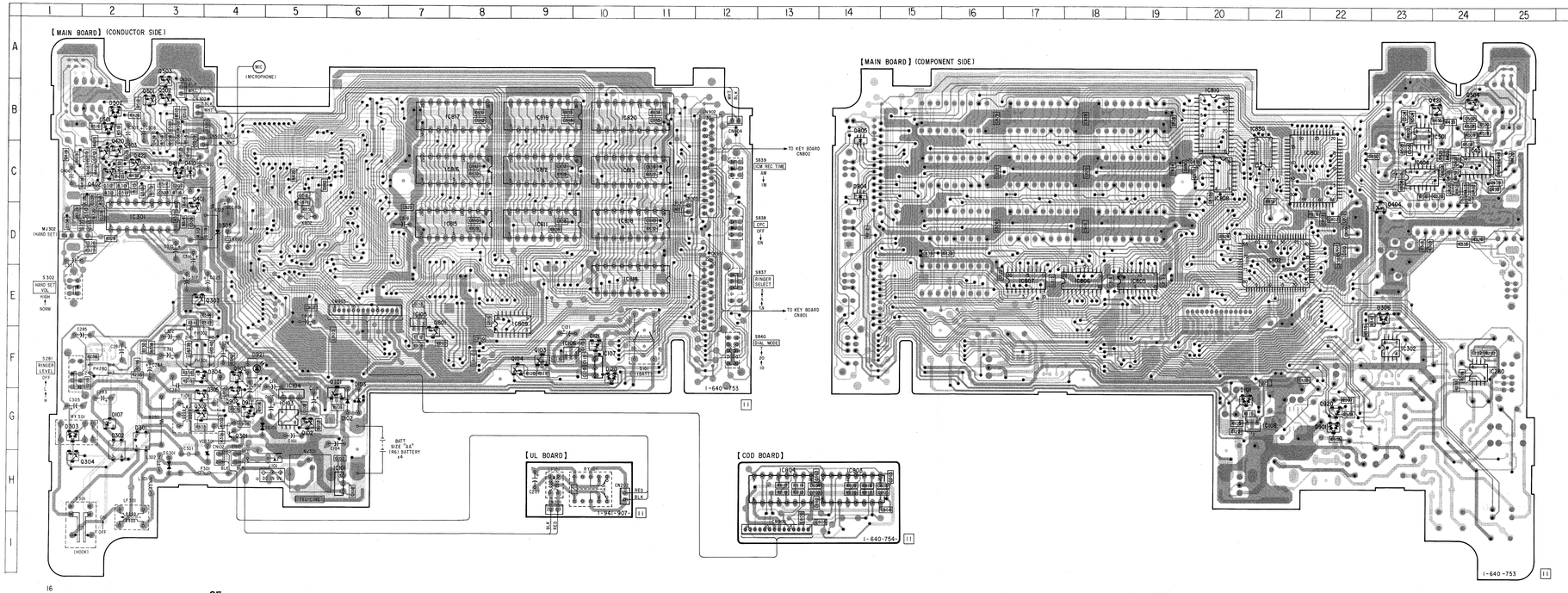
Note on Schematic Diagram :

- All capacitors are in μF unless otherwise noted. pF: μμF 50WV or less are not indicated except for electrolytics and tantaliums.
- All resistors are in Ω and ¼ W or less unless otherwise specified.
- % : indicates tolerance.

Note :The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.

- Voltage and waveforms are dc with respect to ground under no-signal (detuned) conditions.
  no mark : OFF HOOK
  ( ) : ON HOOK
- Voltages are taken with a VOM (input impedance 10 MΩ). Voltage variations may be noted due to normal production tolerances.
- Signal path.
  : RX
  : TX
  : bell
  : dial pulse
  : dial tone

4-3. PRINTED WIRING BOARDS – MAIN SECTION – • See page 48 for Semiconductor Lead Layouts.



• Semiconductor Location

Ref. No.	Location	Ref. No.	Location
D101	G-21	IC806	E-18
D102	G-6	IC807	E-17
D103	G-6	IC808	C-20
D107	G-2	IC809	E-9
D120	F-10	IC810	B-20
D121	F-10	IC811	D-9
D301	G-3	IC812	C-9
D302	H-2	IC813	C-10
D303	G-1	IC814	E-10
D304	F-4	IC815	D-8
D305	D-4	IC816	C-8
D306	E-23	IC817	B-8
D410	C-3	IC818	D-10
D411	C-3	IC819	B-9
D501	B-2	IC820	B-10
D502	B-2	IC850	C-21
D804	C-14		
D805	B-14	Q101	G-6
D901	G-22	Q102	E-5
D911	G-4	Q103	F-9
D920	G-22	Q104	F-9
D921	F-4	Q301	G-4
		Q302	G-4
IC101	H-6	Q303	E-3
IC103	G-5	Q304	H-2
IC104	G-5	Q305	C-4
IC105	E-7	Q401	D-3
IC106	F-10	Q402	C-2
IC107	F-10	Q403	C-2
IC108	G-21	Q404	D-23
IC280	F-24	Q420	C-2
IC301	D-2	Q421	B-24
IC302	F-23	Q422	C-2
IC401	C-24	Q501	B-3
IC404	C-23	Q502	B-3
IC501	B-23	Q503	A-3
IC801	C-22	Q504	B-24
IC802	D-21	Q801	F-7
IC803	H-14	Q902	G-4
IC805	E-19	Q903	F-4
C804	H-13		

Note on Mounting Diagram :

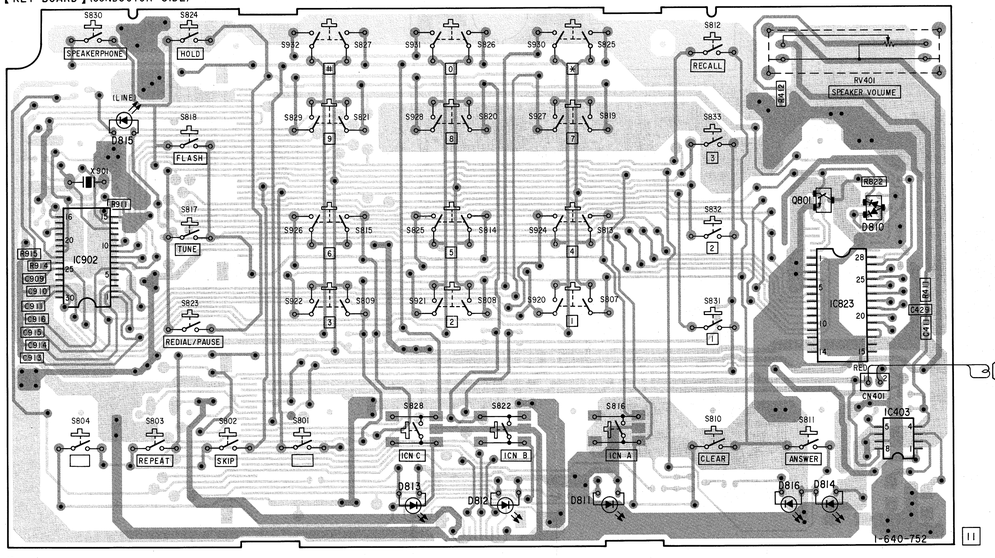
- ○——— : Parts extracted from the component side.
- ● : Through hole.
- ▬ : Pattern on the side which is seen.
- ▭ : Pattern of the rear side.

4-4. PRINTED WIRIN BOARD – KEY BOARD SECTION – • See page 48 for Semiconductor Lead Layouts.

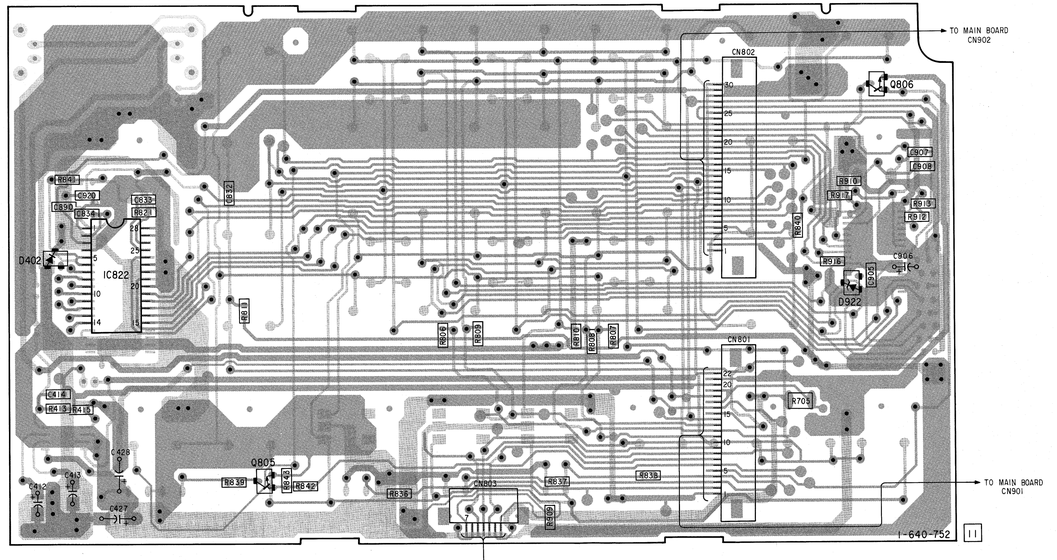
• Semiconductor Location

Ref. No.	Location
D402	C-11
D810	C-9
D811	E-6
D812	E-5
D813	E-4
D814	E-8
D815	B-2
D816	E-8
D922	C-18
IC403	E-9
IC822	C-12
IC823	D-8
IC902	C-1
Q801	C-8
Q805	E-13
Q806	B-19

【KEY BOARD】(CONDUCTOR SIDE)



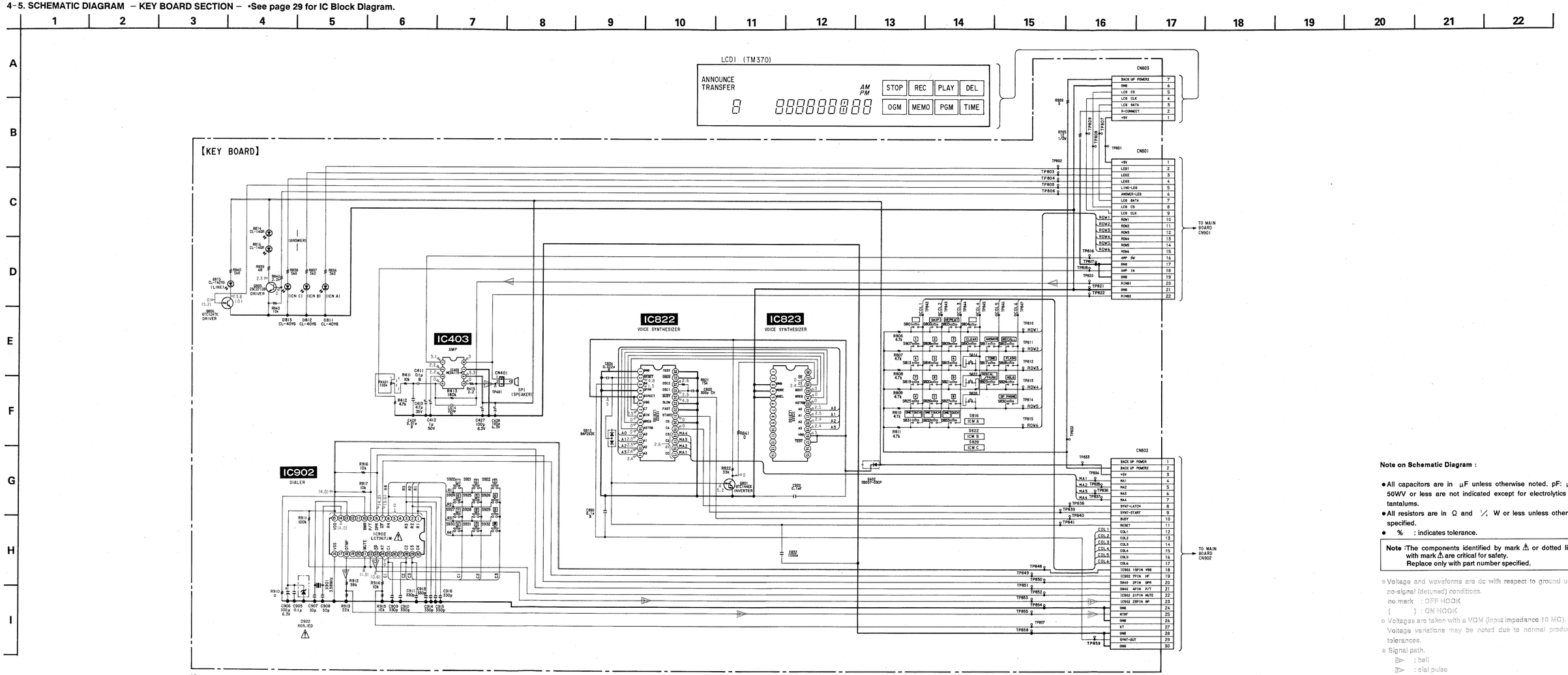
【KEY BOARD】(COMPONENT SIDE)



Note on Mounting Diagram :

- ○——○ : Parts extracted from the component side.
- ● : Through hole.
- ▨ : Pattern on the side which is seen.
- ▨ : Pattern of the rear side.

4-5. SCHEMATIC DIAGRAM – KEY BOARD SECTION – •See page 29 for IC Block Diagram.



16

Note on Schematic Diagram :

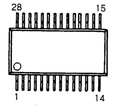
- All capacitors are in μF unless otherwise noted. pF: μμF 50WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in Ω and ⅕ W or less unless otherwise specified.
- % : indicates tolerance.

Note : The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

- Voltage and waveforms are dc with respect to ground under no-signal (detuned) conditions.
  no mark : OFF HOOK
  { } : ON HOOK
- Voltages are taken with a VOM (input impedance 10 MΩ). Voltage variations may be noted due to normal production tolerances.
- Signal path.
  ▷ : bell
  ▷ : dial pulse
  ▷ : dial tone

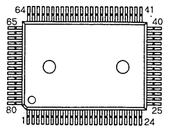
4-6. SEMICONDUCTOR LEAD LAYOUT

CXK5864BM-70L



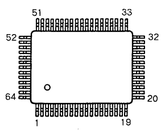
(TOP VIEW)

D600371AQC09



MARKING SIDE VIEW

D600311DQC09



(TOP VIEW)

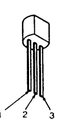
ICL7660CSA-T

(TOP VIEW)

LC7367JM

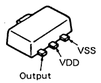
(TOP VIEW)

RC79L05A

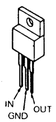


1 Ground
2 Input
3 Output

RH5VA33CC
RH5VA51CA



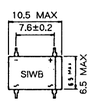
μPC24M05HF
μPC2406HF



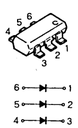
2SA1319T

CL-140R-CD
CL-140YG-X

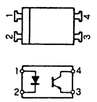
D5SBA20F01



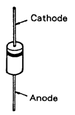
1MN10



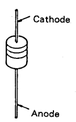
PS2703-1-E3



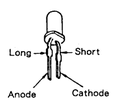
RD13F-B2



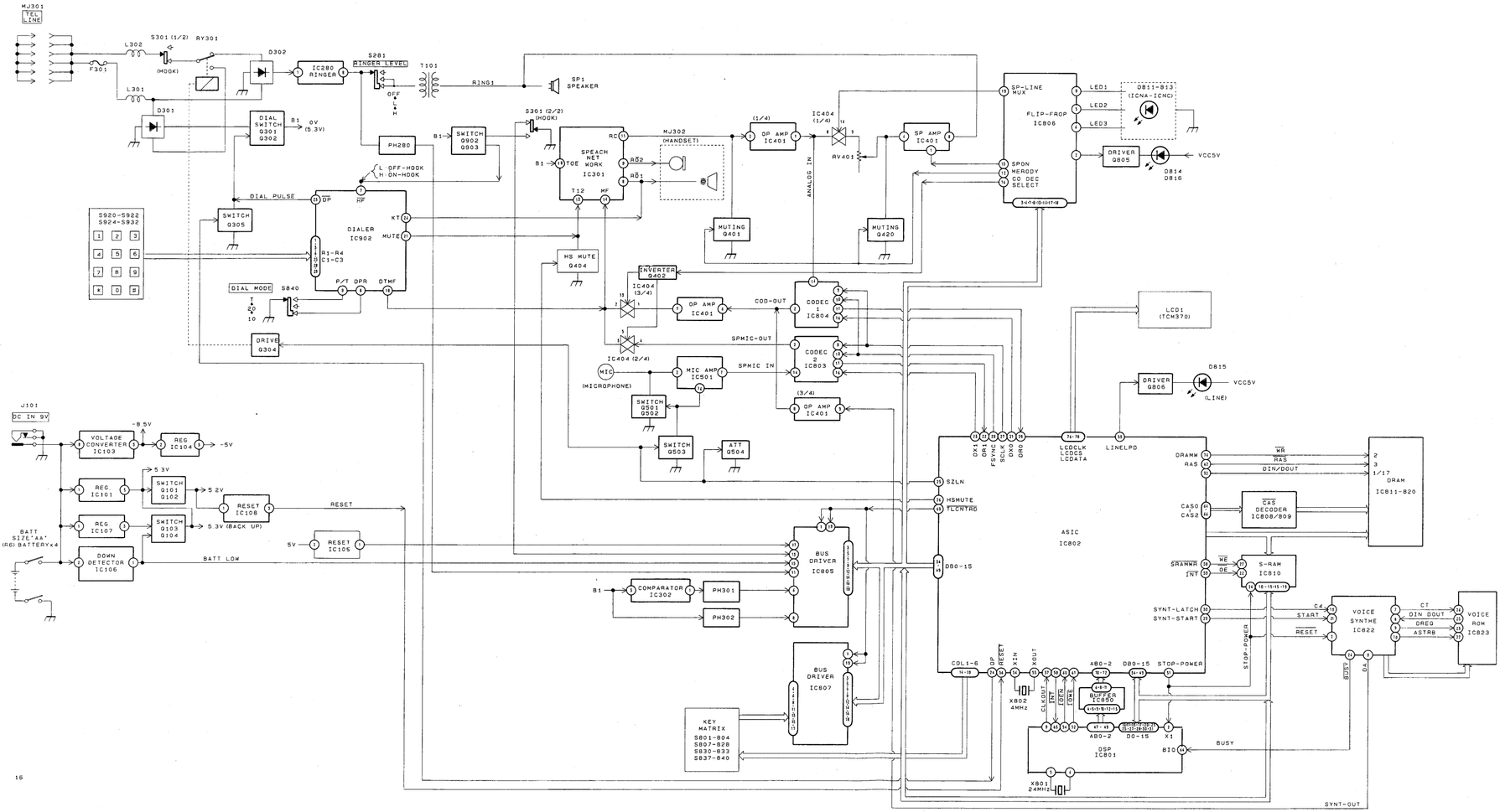
11ES2



TLR124



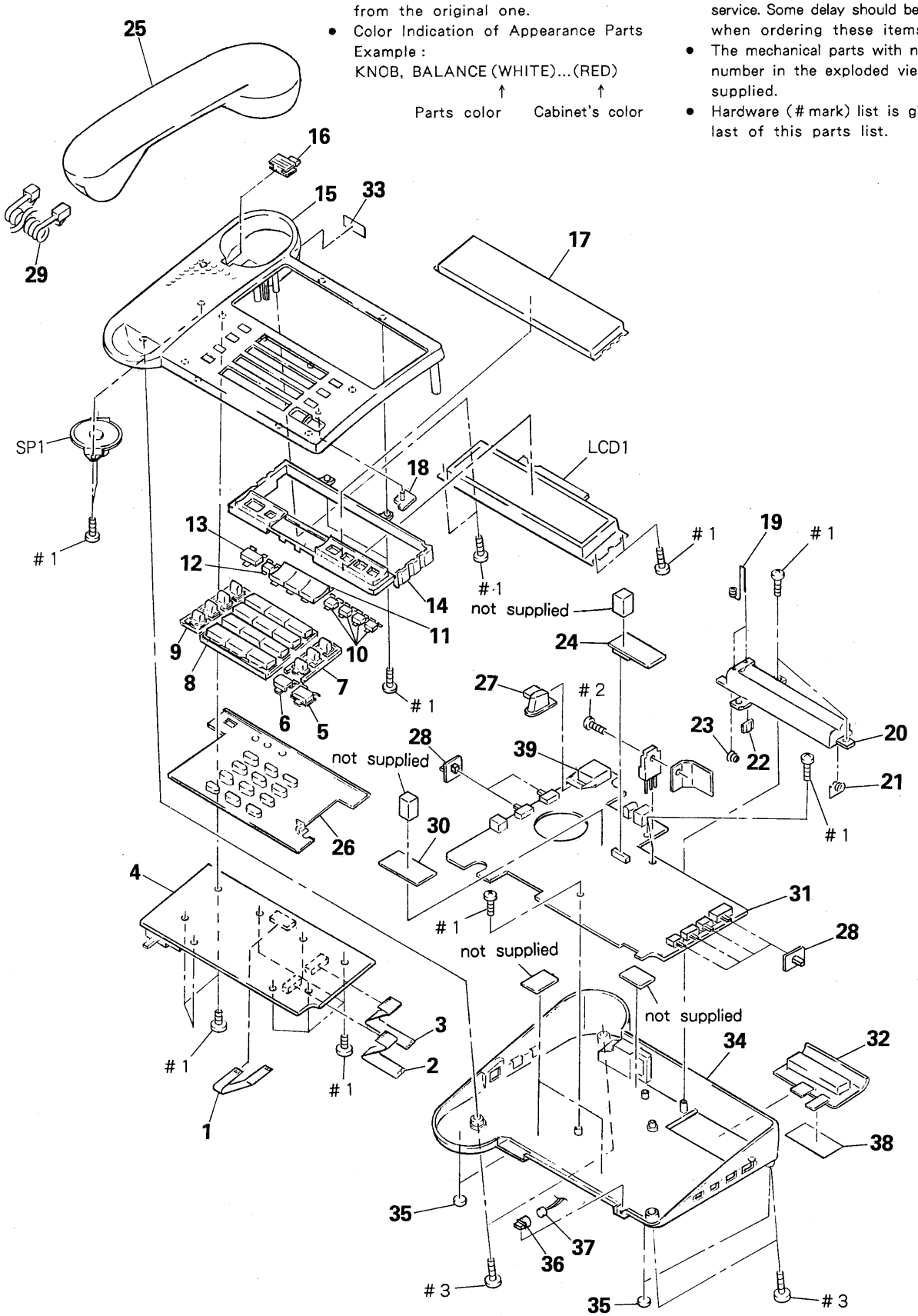
4-7. BLOCK DIAGRAM



SECTION 5
EXPLODED VIEWS

NOTE :

- – XX, – X mean standardized parts, so they may have some differences from the original one.
- Color Indication of Appearance Parts
  Example :
  KNOB, BALANCE (WHITE)...(RED)
  ↑ ↑
  Parts color Cabinet's color
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- The mechanical parts with no reference number in the exploded views are not supplied.
- Hardware (# mark) list is given in the last of this parts list.



Ref. No.	Part No.	Description	Remarks
1	1-690-139-11	WIRE, PVC (FLAT TYPE) (7 CORE)	
2	1-690-141-11	WIRE, PVC (FLAT TYPE) (30 CORE)	
3	1-690-140-11	WIRE, PVC (FLAT TYPE) (22 CORE)	
4	* A-3615-459-A	KEY BOARD, COMPLETE	
5	3-372-070-01	BUTTON (SPEAKERPHONE)	
6	3-372-069-01	BUTTON (HOLD)	
7	3-372-067-11	BUTTON (FK)	
8	3-372-066-01	BUTTON (12 KEY)	
9	3-372-067-01	BUTTON (FK)	
10	3-372-073-01	BUTTON (A)	
11	X-3363-608-1	BUTTON (ICM) ASSY	
12	3-372-073-11	BUTTON (A)	
13	3-372-071-01	BUTTON (ANSWER)	
14	3-372-065-01	PANEL	
15	3-372-062-01	CABINET (UPPER)	
16	3-349-903-61	HOLDER (HAND SET)	
17	3-372-064-01	WINDOW (TRANSPARENT PLATE)	
18	3-372-068-01	LENS (SPEAKERPHONE)	
19	3-372-087-01	SPRING, CONTACT	
20	3-372-075-01	BOX, BATTERY	
21	3-372-088-01	SPRING, PLUS MINUS	

Ref. No.	Part No.	Description	Remarks
22	3-889-903-00	TERMINAL, PLUS	
23	3-372-089-01	SPRING, MINUS	
24	* 1-640-754-11	COD BOARD	
25	1-550-690-11	TRANSMITTER & RECEIVEA	
26	1-572-731-11	SWITCH, RUBBER KEY	
27	3-372-077-01	LEVER (HOOK)	
28	3-351-861-01	KNOB (SW)	
29	1-690-529-11	CORD, CURL	
30	* 1-641-907-11	UL BOARD	
31	* A-3615-458-A	MAIN BOARD, COMPLETE	
32	3-372-076-01	LID, BATTERY CASE	
33	9-911-839-XX	SPACER (C)	
34	X-3363-607-1	CABINET (LOWER) ASSY	
35	3-349-947-01	FOOT, RUBBER	
36	* 3-362-085-01	CUSHION MICROPHONE	
37	1-542-152-11	MICROPHONE, ELECTRET CONDENSER	
38	* 3-373-116-01	LABEL (BATTERY)	
39	3-831-441-XX	PAD, RESET BUTTON (6.5X4.5X0.3)	
SP1	1-544-317-11	SPEAKER	
LCD1	1-809-479-11	LCD UNIT (TM370)	

SECTION 6
ELECTRICAL PARTS LIST

COD KEY

NOTE :

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

When indicating parts by reference number, please include the board name.

- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- −XX, −X mean standardized parts, so they may have some difference from the original one.
- RESISTORS
  All resistors are in ohms.
  METAL : metal-film resistor
  METAL OXIDE : Metal Oxide-film resistor
  F : nonflammable
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- SEMICONDUCTORS
  In each case, u : μ, for example :
  uA... : μA... , uPA... , μPA... , uPB... , μPB... , uPC... , μPC... , uPD..., μPD...
- CAPACITORS :
  uF : μF
- COILS
  uH : μH

Ref. No.	Part No.	Description			Remarks
	* 1-640-754-11	COD BOARD			
	*********				
		< CAPACITOR >			
C803	1-163-038-00	CERAMIC CHIP	0.1uF	25V	
C804	1-163-038-00	CERAMIC CHIP	0.1uF	25V	
C805	1-163-038-00	CERAMIC CHIP	0.1uF	25V	
C806	1-163-038-00	CERAMIC CHIP	0.1uF	25V	
C862	1-163-009-11	CERAMIC CHIP	0.001uF 10%	50V	
C863	1-163-009-11	CERAMIC CHIP	0.001uF 10%	50V	
C864	1-163-009-11	CERAMIC CHIP	0.001uF 10%	50V	
C865	1-163-009-11	CERAMIC CHIP	0.001uF 10%	50V	
		< CONNECTOR >			
CN905	1-573-665-11	CONNECTOR, PIN (PC BOARD) 14P			
		< IC >			
IC803	8-759-521-19	IC D000026ADC			
IC804	8-759-521-19	IC D000026ADC			
		< COIL >			
L805	1-543-775-11	FILTER, EMI			
L806	1-543-775-11	FILTER, EMI			
		< RESISTOR >			
R813	1-216-097-00	METAL CHIP	100K 5%	1/10W	
R814	1-216-097-00	METAL CHIP	100K 5%	1/10W	
R815	1-216-324-11	METAL GLAZE	10K 1%	1/10W	
R816	1-216-324-11	METAL GLAZE	10K 1%	1/10W	
R817	1-216-324-11	METAL GLAZE	10K 1%	1/10W	
R818	1-216-324-11	METAL GLAZE	10K 1%	1/10W	
R819	1-216-324-11	METAL GLAZE	10K 1%	1/10W	
R820	1-216-324-11	METAL GLAZE	10K 1%	1/10W	

****

Ref. No.	Part No.	Description			Remarks
	* A-3615-459-A	KEY BOARD, COMPLETE			
	**********				
	1-690-139-11	WIRE, PVC (FLAT TYPE) (7 CORE)			
	1-690-140-11	WIRE, PVC (FLAT TYPE) (22 CORE)			
	1-690-141-11	WIRE, PVC (FLAT TYPE) (30 CORE)			
		< CAPACITOR >			
C411	1-164-004-11	CERAMIC CHIP	0.1uF 10%	25V	
C412	1-126-193-11	ELECT	1uF 20%	50V	
C413	1-126-603-11	ELECT CHIP	4.7uF 20%	35V	
C414	1-163-121-00	CERAMIC CHIP	150PF 5%	50V	
C427	1-126-206-11	ELECT CHIP	100uF 20%	6.3V	
C428	1-126-206-11	ELECT CHIP	100uF 20%	6.3V	
C429	1-164-232-11	CERAMIC CHIP	0.01uF	50V	
C832	1-163-009-11	CERAMIC CHIP	0.001uF 10%	50V	
C833	1-163-128-00	CERAMIC CHIP	300PF 5%	50V	
C834	1-163-037-11	CERAMIC CHIP	0.022uF 10%	25V	
C890	1-164-004-11	CERAMIC CHIP	0.1uF 10%	25V	
C905	1-163-038-00	CERAMIC CHIP	0.1uF	25V	
C906	1-126-206-11	ELECT CHIP	100uF 20%	6.3V	
C907	1-163-104-00	CERAMIC CHIP	30PF 5%	50V	
C908	1-163-104-00	CERAMIC CHIP	30PF 5%	50V	
C909	1-163-263-11	CERAMIC CHIP	330PF 5%	50V	
C910	1-163-263-11	CERAMIC CHIP	330PF 5%	50V	
C911	1-163-263-11	CERAMIC CHIP	330PF 5%	50V	
C913	1-163-263-11	CERAMIC CHIP	330PF 5%	50V	
C914	1-163-263-11	CERAMIC CHIP	330PF 5%	50V	
C915	1-163-263-11	CERAMIC CHIP	330PF 5%	50V	
C916	1-163-263-11	CERAMIC CHIP	330PF 5%	50V	
C920	1-163-038-00	CERAMIC CHIP	0.1uF	25V	
		< CONNECTOR >			
CN401	* 1-564-704-11	PIN, CONNECTOR (SMALL TYPE) 2P			
CN801	* 1-565-211-11	CONNECTOR, FPC (ZIF) 22P			
CN802	* 1-569-035-11	CONNECTOR, FPC (ZIF) 30P			
CN803	1-573-153-21	CONNECTOR, FPC (PC BOARD) 7P			

KEY MAIN

Ref. No.	Part No.	Description	Remarks
		< DIODE >	
D402	8-719-941-04	DIODE SB007-03CP	
D810	8-719-104-34	DIODE 1S2836	
D811	8-719-984-33	DIODE CL-140YG-X	
D812	8-719-984-33	DIODE CL-140YG-X	
D813	8-719-984-33	DIODE CL-140YG-X	
D814	8-719-984-31	DIODE CL-140R-CD	
D815	8-719-984-33	DIODE CL-140YG-X	
D816	8-719-984-31	DIODE CL-140R-CD	
D922 ⚠	8-719-105-82	DIODE RD5.1M-B2	
		< IC >	
IC403	8-759-030-76	IC MC34119-ML	
IC822	8-759-824-25	IC LC8100-6038	
IC823	8-759-824-27	IC LC3100-952	
IC902 ⚠	8-759-823-96	IC LC7367JM	
		< TRANSISTOR >	
Q801	8-729-901-01	TRANSISTOR DTC144EK	
Q805	8-729-230-49	TRANSISTOR 2SC2712YG	
Q806	8-729-920-08	TRANSISTOR DTC124TK	
		< RESISTOR >	
R411	1-216-073-00	METAL CHIP 10K 5% 1/10W	
R412	1-216-065-00	METAL CHIP 4.7K 5% 1/10W	
R413	1-216-107-00	METAL CHIP 270K 5% 1/10W	
R415	1-216-298-00	METAL CHIP 2.2 5% 1/10W	
R705	1-218-279-11	METAL GLAZE 12 5% 1/2W	
R806	1-216-065-00	METAL CHIP 4.7K 5% 1/10W	
R807	1-216-065-00	METAL CHIP 4.7K 5% 1/10W	
R808	1-216-065-00	METAL CHIP 4.7K 5% 1/10W	
R809	1-216-065-00	METAL CHIP 4.7K 5% 1/10W	
R810	1-216-065-00	METAL CHIP 4.7K 5% 1/10W	
R811	1-216-065-00	METAL CHIP 4.7K 5% 1/10W	
R821	1-216-077-00	METAL CHIP 15K 5% 1/10W	
R822	1-216-085-00	METAL CHIP 33K 5% 1/10W	
R836	1-216-043-00	METAL CHIP 560 5% 1/10W	
R837	1-216-043-00	METAL CHIP 560 5% 1/10W	
R838	1-216-043-00	METAL CHIP 560 5% 1/10W	
R839	1-216-021-00	METAL CHIP 68 5% 1/10W	
R840	1-216-043-00	METAL CHIP 560 5% 1/10W	
R841	1-216-295-00	METAL CHIP 0 5% 1/10W	
R842	1-216-057-00	METAL CHIP 2.2K 5% 1/10W	
R843	1-216-073-00	METAL CHIP 10K 5% 1/10W	
R909	1-216-295-00	METAL CHIP 0 5% 1/10W	
R910	1-216-295-00	METAL CHIP 0 5% 1/10W	
R911	1-216-097-00	METAL CHIP 100K 5% 1/10W	
R912	1-216-748-11	METAL CHIP 39K 1% 1/10W	
R913	1-216-081-00	METAL CHIP 22K 5% 1/10W	
R914	1-216-073-00	METAL CHIP 10K 5% 1/10W	
R915	1-216-073-00	METAL CHIP 10K 5% 1/10W	
R916	1-216-073-00	METAL CHIP 10K 5% 1/10W	
R917	1-216-073-00	METAL CHIP 10K 5% 1/10W	
		< VARIABLE RESISTOR >	
RV401	1-241-580-11	RES, VAR, SLIDE 100K	
		< CRYSTAL >	
X901	1-577-247-11	VIBRATOR, CERAMIC 3.58MHz	
		**********	
	* A-3615-458-A	MAIN BOARD, COMPLETE	
		**********	
	3-349-576-11	CUSHION	
	3-349-576-21	CUSHION	
	3-351-861-01	KNOB (SW)	
	3-372-077-01	LEVER (HOOK)	
	3-375-140-01	CUSHION (UL)	
	9-911-839-XX	CUSHION, CR	
	9-911-840-XX	CUSHION, LID	
	7-685-534-19	SCREW +BTP 2.6X8 TYPE2 N-S	
		< CAPACITOR >	
C101 ⚠	1-124-360-00	ELECT 1000uF 20% 16V	
C102 ⚠	1-163-038-00	CERAMIC CHIP 0.1uF 25V	
C103	1-163-038-00	CERAMIC CHIP 0.1uF 25V	
C104	1-124-140-00	ELECT 220uF 20% 10V	
C107	1-124-034-51	ELECT 33uF 20% 16V	
C108	1-124-034-51	ELECT 33uF 20% 16V	
C109	1-163-038-00	CERAMIC CHIP 0.1uF 25V	
C110	1-163-038-00	CERAMIC CHIP 0.1uF 25V	
C111	1-126-157-11	ELECT 10uF 20% 16V	
C112	1-163-038-00	CERAMIC CHIP 0.1uF 25V	
C113	1-163-038-00	CERAMIC CHIP 0.1uF 25V	
C115	1-163-038-00	CERAMIC CHIP 0.1uF 25V	
C116	1-163-038-00	CERAMIC CHIP 0.1uF 25V	
C119	1-163-038-00	CERAMIC CHIP 0.1uF 25V	
C120	1-163-038-00	CERAMIC CHIP 0.1uF 25V	

Note: The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Ref. No.	Part No.	Description			Remarks
C121	1-124-140-00	ELECT	220uF	20%	10V
C122	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C123	1-164-346-11	CERAMIC CHIP	1uF		16V
C280 ⚠	1-136-563-11	FILM	0.9uF	10%	250V
C281	1-124-465-00	ELECT	0.47uF	20%	50V
C282	1-164-182-11	CERAMIC CHIP	0.0033uF	10%	50V
C283 ⚠	1-124-261-00	ELECT	10uF	20%	50V
C284	1-126-301-11	ELECT	1uF	20%	50V
C285	1-124-463-00	ELECT	0.1uF	20%	50V
C301 ⚠	1-106-371-00	MYLAR	0.015uF	5%	200V
C305 ⚠	1-126-096-11	ELECT	10uF	20%	35V
C306	1-163-023-00	CERAMIC CHIP	0.015uF	5%	50V
C307	1-163-809-11	CERAMIC CHIP	0.047uF	10%	25V
C308	1-163-017-00	CERAMIC CHIP	0.0047uF	5%	50V
C309	1-163-809-11	CERAMIC CHIP	0.047uF	10%	25V
C310	1-163-809-11	CERAMIC CHIP	0.047uF	10%	25V
C311	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C312	1-163-809-11	CERAMIC CHIP	0.047uF	10%	25V
C313	1-163-809-11	CERAMIC CHIP	0.047uF	10%	25V
C314	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C315	1-124-916-11	ELECT	22uF	20%	63V
C316	1-126-157-11	ELECT	10uF	20%	16V
C317	1-126-177-11	ELECT	100uF	20%	10V
C318	1-163-017-00	CERAMIC CHIP	0.0047uF	5%	50V
C320	1-163-017-00	CERAMIC CHIP	0.0047uF	5%	50V
C321	1-126-301-11	ELECT	1uF	20%	50V
C322	1-124-034-51	ELECT	33uF	20%	16V
C324	1-126-301-11	ELECT	1uF	20%	50V
C325	1-124-465-00	ELECT	0.47uF	20%	50V
C326	1-163-133-00	CERAMIC CHIP	470PF	5%	50V
C351	1-126-163-11	ELECT	4.7uF	20%	50V
C352	1-163-133-00	CERAMIC CHIP	470PF	5%	50V
C353	1-163-133-00	CERAMIC CHIP	470PF	5%	50V
C354	1-163-133-00	CERAMIC CHIP	470PF	5%	50V
C355	1-163-133-00	CERAMIC CHIP	470PF	5%	50V
C356	1-163-133-00	CERAMIC CHIP	470PF	5%	50V
C401	1-163-023-00	CERAMIC CHIP	0.015uF	5%	50V
C402	1-163-109-00	CERAMIC CHIP	47PF	5%	50V
C403	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C404	1-163-037-11	CERAMIC CHIP	0.022uF	10%	25V
C406	1-124-638-11	ELECT	22uF	20%	10V
C407	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C408	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C410	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C415	1-163-037-11	CERAMIC CHIP	0.022uF	10%	25V

Ref. No.	Part No.	Description			Remarks
C418	1-163-017-00	CERAMIC CHIP	0.0047uF	5%	50V
C419	1-163-809-11	CERAMIC CHIP	0.047uF	10%	25V
C421	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C424	1-163-037-11	CERAMIC CHIP	0.022uF	10%	25V
C430	1-163-141-00	CERAMIC CHIP	0.001uF	5%	50V
C450	1-163-037-11	CERAMIC CHIP	0.022uF	10%	25V
C502	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C503	1-163-109-00	CERAMIC CHIP	47PF	5%	50V
C504	1-163-809-11	CERAMIC CHIP	0.047uF	10%	25V
C505	1-163-109-00	CERAMIC CHIP	47PF	5%	50V
C506	1-163-809-11	CERAMIC CHIP	0.047uF	10%	25V
C507	1-126-157-11	ELECT	10uF	20%	16V
C508	1-124-638-11	ELECT	22uF	20%	10V
C509	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C510	1-126-154-11	ELECT	47uF	20%	6.3V
C511	1-163-809-11	CERAMIC CHIP	0.047uF	10%	25V
C520	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C801	1-126-177-11	ELECT	100uF	20%	10V
C803	1-163-141-00	CERAMIC CHIP	0.001uF	5%	50V
C807	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C808	1-126-177-11	ELECT	100uF	20%	10V
C809	1-163-105-00	CERAMIC CHIP	33PF	5%	50V
C810	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C811	1-163-237-11	CERAMIC CHIP	27PF	5%	50V
C812	1-163-237-11	CERAMIC CHIP	27PF	5%	50V
C813	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C814	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C815	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C816	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C817	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C818	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C819	1-126-177-11	ELECT	100uF	20%	10V
C820	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C821	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C822	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C823	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C824	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C825	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C826	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C828	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C829	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C830	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C835	1-163-109-00	CERAMIC CHIP	47PF	5%	50V
C836	1-163-109-00	CERAMIC CHIP	47PF	5%	50V
C837	1-163-109-00	CERAMIC CHIP	47PF	5%	50V

Note: The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

MAIN

SEE ADDITIONAL INFORMATION

Ref. No.	Part No.	Description			Remarks
C838	1-163-109-00	CERAMIC CHIP	47PF	5% 50V	
C839	1-163-109-00	CERAMIC CHIP	47PF	5% 50V	
C840	1-163-109-00	CERAMIC CHIP	47PF	5% 50V	
C841	1-163-109-00	CERAMIC CHIP	47PF	5% 50V	
C842	1-163-109-00	CERAMIC CHIP	47PF	5% 50V	
C843	1-163-109-00	CERAMIC CHIP	47PF	5% 50V	
C844	1-163-109-00	CERAMIC CHIP	47PF	5% 50V	
C845	1-163-109-00	CERAMIC CHIP	47PF	5% 50V	
C851	1-163-235-11	CERAMIC CHIP	22PF	5% 50V	
C860	1-163-009-11	CERAMIC CHIP	0.001uF	10% 50V	
C861	1-163-038-00	CERAMIC CHIP	0.1uF	25V	
C901	1-163-031-11	CERAMIC CHIP	0.01uF	50V	
C902	1-124-257-00	ELECT	2.2uF	20% 50V	
		< CONNECTOR >			
CN101	* 1-564-704-11	PIN, CONNECTOR (SMALL TYPE) 2P			
CN102	* 1-564-704-11	PIN, CONNECTOR (SMALL TYPE) 2P			
CN301	* 1-564-704-11	PIN, CONNECTOR (SMALL TYPE) 2P			
CN302	* 1-564-704-11	PIN, CONNECTOR (SMALL TYPE) 2P			
CN502	* 1-564-704-11	PIN, CONNECTOR (SMALL TYPE) 2P			
CN904	* 1-564-704-11	PIN, CONNECTOR (SMALL TYPE) 2P			
CN905	* 1-564-704-11	PIN, CONNECTOR (SMALL TYPE) 2P			
		< DIODE >			
D101	8-719-104-34	DIODE	1S2836		
D102	8-719-200-82	DIODE	11ES2		
D103	8-719-200-82	DIODE	11ES2		
D107	⚠ 8-719-118-18	DIODE	RD39MB		
D120	8-719-104-34	DIODE	1S2836		
D121	8-719-941-04	DIODE	SB007-03CP		
D301	⚠ 8-719-510-68	DIODE	D5SBA20F01		
D302	⚠ 8-719-510-68	DIODE	D5SBA20F01		
D303	⚠ 8-719-104-34	DIODE	1S2836		
D304	⚠ 8-719-941-04	DIODE	SB007-03CP		
D305	⚠ 8-719-160-59	DIODE	RD13F-B2		
D306	8-719-104-34	DIODE	1S2836		
D410	8-719-951-22	DIODE	IMN10		
D411	8-719-104-34	DIODE	1S2836		
D501	8-719-104-34	DIODE	1S2836		
D502	8-719-104-34	DIODE	1S2836		
D804	8-719-951-22	DIODE	IMN10		
D805	8-719-951-22	DIODE	IMN10		
D901	⚠ 8-719-104-34	DIODE	1S2836		
D911	⚠ 8-719-941-04	DIODE	SB007-03CP		
D920	⚠ 8-719-941-04	DIODE	SB007-03CP		
D921	⚠ 8-719-812-41	LED	TLR124		
		< FUSE >			
F301	⚠ 1-532-773-21	FUSE, MICRO (SECONDARY)			
		< IC >			
IC101	⚠ 8-759-148-79	IC	uPC2406HF		
IC103	⚠ 8-759-518-28	IC	ICL7660CSA-T		
IC104	8-759-982-44	IC	RC79L05A		
IC105	8-759-998-74	IC	RH5VA33CC		
IC106	8-759-053-40	IC	RH5VA51CA		
IC107	8-759-144-84	IC	uPC24M05HF		
IC108	8-759-502-55	IC	PST529FMT		
IC280	⚠ 8-759-322-42	IC	HA16805F		
IC301	⚠ 8-759-979-34	IC	BA6566		
IC302	⚠ 8-759-100-93	IC	uPC393G2		
IC401	⚠ 8-759-983-74	IC	LM324NS		
IC404	8-759-008-67	IC	MC14066BF		
IC501	8-759-981-95	IC	RC4558S		
IC801	8-759-051-55	IC	D600311DQC09		
IC802	8-759-521-17	IC	D600371AQC09		
IC805	8-759-926-48	IC	SN74HC244ANS		
IC806	8-759-926-67	IC	SN74HC374ANS		
IC807	8-759-926-48	IC	SN74HC244ANS		
IC808	8-759-926-12	IC	SN74HC139ANS		
IC809	8-759-926-12	IC	SN74HC139ANS		
IC810	8-752-330-96	IC	CXK5864BM-70L		
IC811	8-759-521-18	IC	D000031ADC		
IC812	8-759-521-18	IC	D000031ADC		
IC813	8-759-521-18	IC	D000031ADC		
IC814	8-759-521-18	IC	D000031ADC		
IC815	8-759-521-18	IC	D000031ADC		
IC816	8-759-521-18	IC	D000031ADC		
IC817	8-759-521-18	IC	D000031ADC		
IC818	8-759-521-18	IC	D000031ADC		
IC819	8-759-521-18	IC	D000031ADC		
IC820	8-759-521-18	IC	D000031ADC		
IC850	8-759-925-76	IC	SN74HC08ANS		
		< JACK >			
J101	1-573-667-11	JACK, DC			

Note: The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Ref. No.	Part No.	Description	Remarks
		< COIL >	
L301	1-424-090-11	COIL, LINE FILTER	
L302	1-424-090-11	COIL, LINE FILTER	
L801	1-410-198-51	INDUCTOR CHIP 3.3uH	
L802	1-543-775-11	FILTER, EMI	
L803	1-543-775-11	FILTER, EMI	
L804	1-543-775-11	FILTER, EMI	
		< FILTER >	
LF301	⚠ 1-424-024-11	FILTER, NOISE	
		< JACK >	
MJ301	1-566-865-21	JACK, MODULAR	
MJ302	1-580-485-21	JACK, MODULAR (4P-4C)	
		< PHOTO INTERUPTER >	
PH280	⚠ 8-719-156-75	DIODE PS2703-1-E3	
PH301	⚠ 8-719-156-75	DIODE PS2703-1-E3	
PH302	⚠ 8-719-156-75	DIODE PS2703-1-E3	
		< TRANSISTOR >	
Q101	8-729-804-41	TRANSISTOR 2SB1122-S	
Q102	8-729-901-01	TRANSISTOR DTC144EK	
Q103	8-729-804-41	TRANSISTOR 2SB1122-S	
Q104	8-729-901-01	TRANSISTOR DTC144EK	
Q301	⚠ 8-729-804-09	TRANSISTOR 2SA1319T	
Q302	⚠ 8-729-205-76	TRANSISTOR 2SC3138Y-TE85L	
Q303	8-729-230-49	TRANSISTOR 2SC2712-G	
Q304	⚠ 8-729-920-08	TRANSISTOR DTC124TK	
Q305	⚠ 8-729-901-01	TRANSISTOR DTC144EK	
Q401	⚠ 8-729-230-49	TRANSISTOR 2SC2712-G	
Q402	8-729-901-01	TRANSISTOR DTC144EK	
Q403	8-729-901-01	TRANSISTOR DTC144EK	
Q404	8-729-901-01	TRANSISTOR DTC144EK	
Q420	8-729-901-01	TRANSISTOR DTC144EK	
Q421	8-729-901-01	TRANSISTOR DTC144EK	
Q422	8-729-901-01	TRANSISTOR DTC144EK	
Q501	8-729-230-49	TRANSISTOR 2SC2712-G	
Q502	8-729-230-49	TRANSISTOR 2SC2712-G	
Q503	8-729-901-01	TRANSISTOR DTC144EK	
Q504	8-729-901-01	TRANSISTOR DTC144EK	
Q801	8-729-901-01	TRANSISTOR DTC144EK	
Q902	8-729-230-49	TRANSISTOR 2SC2712-G	
Q903	8-729-901-01	TRANSISTOR DTC144EK	

Ref. No.	Part No.	Description			Remarks
		< RESISTOR >			
R101	1-216-081-00	METAL CHIP	22K	5% 1/10W	
R102	1-216-041-00	METAL CHIP	470	5% 1/10W	
R105	1-216-049-00	METAL CHIP	1K	5% 1/10W	
R111	1-216-105-00	METAL CHIP	220K	5% 1/10W	
R120	1-216-041-00	METAL CHIP	470	5% 1/10W	
R121	1-216-081-00	METAL CHIP	22K	5% 1/10W	
R280	⚠ 1-247-756-11	CARBON	2.2K	5% 1/2W	
R281	1-216-101-00	METAL CHIP	150K	5% 1/10W	
R282	1-216-105-00	METAL CHIP	220K	5% 1/10W	
R283	1-216-065-00	METAL CHIP	4.7K	5% 1/10W	
R284	1-216-085-00	METAL CHIP	33K	5% 1/10W	
R285	1-216-097-00	METAL CHIP	100K	5% 1/10W	
R286	1-216-073-00	METAL CHIP	10K	5% 1/10W	
R287	1-216-081-00	METAL CHIP	22K	5% 1/10W	
R301	1-216-097-00	METAL CHIP	100K	5% 1/10W	
R302	1-216-065-00	METAL CHIP	4.7K	5% 1/10W	
R303	1-216-105-00	METAL CHIP	220K	5% 1/10W	
R306	1-216-097-00	METAL CHIP	100K	5% 1/10W	
R310	1-216-090-00	METAL CHIP	51K	5% 1/10W	
R311	1-216-069-00	METAL CHIP	6.8K	5% 1/10W	
R312	1-216-083-00	METAL CHIP	27K	5% 1/10W	
R313	1-216-049-00	METAL CHIP	1K	5% 1/10W	
R314	1-216-063-00	METAL CHIP	3.9K	5% 1/10W	
R315	1-216-073-00	METAL CHIP	10K	5% 1/10W	
R316	1-216-041-00	METAL CHIP	470	5% 1/10W	
R317	1-216-075-00	METAL CHIP	12K	5% 1/10W	
R318	1-216-065-00	METAL CHIP	4.7K	5% 1/10W	
R319	1-216-091-00	METAL CHIP	56K	5% 1/10W	
R320	1-216-065-00	METAL CHIP	4.7K	5% 1/10W	
R321	1-216-017-00	METAL CHIP	47	5% 1/10W	
R322	1-247-734-11	CARBON	39	5% 1/2W	
R325	1-216-053-00	METAL CHIP	1.5K	5% 1/10W	
R326	1-216-049-00	METAL CHIP	1K	5% 1/10W	
R327	1-216-057-00	METAL CHIP	2.2K	5% 1/10W	
R328	1-216-057-00	METAL CHIP	2.2K	5% 1/10W	
R329	1-216-049-00	METAL CHIP	1K	5% 1/10W	
R333	1-216-073-00	METAL CHIP	10K	5% 1/10W	
R335	1-216-699-11	METAL CHIP	100K	0.5% 1/10W	
R336	1-216-699-11	METAL CHIP	100K	0.5% 1/10W	
R337	1-216-695-11	METAL CHIP	68K	0.5% 1/10W	
R338	1-216-695-11	METAL CHIP	68K	0.5% 1/10W	
R339	1-216-065-00	METAL CHIP	4.7K	5% 1/10W	
R340	1-216-073-00	METAL CHIP	10K	5% 1/10W	
R341	1-216-083-00	METAL CHIP	27K	5% 1/10W	

Note: The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

MAIN

Ref. No.	Part No.	Description			Remarks
R342	1-216-097-00	METAL CHIP	100K	5% 1/10W	
R343	1-216-073-00	METAL CHIP	10K	5% 1/10W	
R344	1-216-119-00	METAL CHIP	820K	5% 1/10W	
R345	1-216-067-00	METAL CHIP	5.6K	5% 1/10W	
R346	1-216-085-00	METAL CHIP	33K	5% 1/10W	
R347	1-216-105-00	METAL CHIP	220K	5% 1/10W	
R401	1-216-085-00	METAL CHIP	33K	5% 1/10W	
R402	1-216-077-00	METAL CHIP	15K	5% 1/10W	
R403	1-216-119-00	METAL CHIP	820K	5% 1/10W	
R404	1-216-097-00	METAL CHIP	100K	5% 1/10W	
R406	1-216-073-00	METAL CHIP	10K	5% 1/10W	
R408	1-216-295-00	METAL CHIP	0	5% 1/10W	
R409	1-216-089-00	METAL CHIP	47K	5% 1/10W	
R410	1-216-091-00	METAL CHIP	56K	5% 1/10W	
R414	1-216-073-00	METAL CHIP	10K	5% 1/10W	
R417	1-216-081-00	METAL CHIP	22K	5% 1/10W	
R418	1-216-063-00	METAL CHIP	3.9K	5% 1/10W	
R419	1-216-069-00	METAL CHIP	6.8K	5% 1/10W	
R420	1-216-073-00	METAL CHIP	10K	5% 1/10W	
R422	1-216-081-00	METAL CHIP	22K	5% 1/10W	
R425	1-216-067-00	METAL CHIP	5.6K	5% 1/10W	
R426	1-216-041-00	METAL CHIP	470	5% 1/10W	
R432	1-216-073-00	METAL CHIP	10K	5% 1/10W	
R433	1-216-057-00	METAL CHIP	2.2K	5% 1/10W	
R450	1-216-067-00	METAL CHIP	5.6K	5% 1/10W	
R451	1-216-073-00	METAL CHIP	10K	5% 1/10W	
R452	1-216-057-00	METAL CHIP	2.2K	5% 1/10W	
R453	1-216-097-00	METAL CHIP	100K	5% 1/10W	
R503	1-216-113-00	METAL CHIP	470K	5% 1/10W	
R504	1-216-081-00	METAL CHIP	22K	5% 1/10W	
R505	1-216-113-00	METAL CHIP	470K	5% 1/10W	
R506	1-216-081-00	METAL CHIP	22K	5% 1/10W	
R507	1-216-077-00	METAL CHIP	15K	5% 1/10W	
R508	1-216-089-00	METAL CHIP	47K	5% 1/10W	
R509	1-216-057-00	METAL CHIP	2.2K	5% 1/10W	
R510	1-216-049-00	METAL CHIP	1K	5% 1/10W	
R511	1-216-121-00	METAL CHIP	1M	5% 1/10W	
R512	1-216-049-00	METAL CHIP	1K	5% 1/10W	
R513	1-216-077-00	METAL CHIP	15K	5% 1/10W	
R514	1-216-073-00	METAL CHIP	10K	5% 1/10W	
R515	1-216-049-00	METAL CHIP	1K	5% 1/10W	
R516	1-216-049-00	METAL CHIP	1K	5% 1/10W	
R517	1-216-051-00	METAL CHIP	1.2K	5% 1/10W	
R518	1-216-081-00	METAL CHIP	22K	5% 1/10W	
R519	1-216-073-00	METAL CHIP	10K	5% 1/10W	
R520	1-216-065-00	METAL CHIP	4.7K	5% 1/10W	
R812	1-216-065-00	METAL CHIP	4.7K	5% 1/10W	
R819	1-216-042-00	METAL CHIP	510	5% 1/10W	
R823	1-216-013-00	METAL CHIP	33	5% 1/10W	
R824	1-216-013-00	METAL CHIP	33	5% 1/10W	
R825	1-216-013-00	METAL CHIP	33	5% 1/10W	
R826	1-216-013-00	METAL CHIP	33	5% 1/10W	
R827	1-216-013-00	METAL CHIP	33	5% 1/10W	
R828	1-216-013-00	METAL CHIP	33	5% 1/10W	
R829	1-216-013-00	METAL CHIP	33	5% 1/10W	
R830	1-216-013-00	METAL CHIP	33	5% 1/10W	
R831	1-216-013-00	METAL CHIP	33	5% 1/10W	
R832	1-216-013-00	METAL CHIP	33	5% 1/10W	
R833	1-216-013-00	METAL CHIP	33	5% 1/10W	
R834	1-216-013-00	METAL CHIP	33	5% 1/10W	
R850	1-216-128-11	METAL GLAZE	2M	5% 1/10W	
R851	1-216-056-00	METAL GLAZE	2K	5% 1/10W	
R860	1-216-065-00	METAL CHIP	4.7K	5% 1/10W	
R890	1-216-049-00	METAL CHIP	1K	5% 1/10W	
R903	1-216-097-00	METAL CHIP	100K	5% 1/10W	
R904	1-216-057-00	METAL CHIP	2.2K	5% 1/10W	
R905	1-216-105-00	METAL CHIP	220K	5% 1/10W	
R906	1-216-121-00	METAL CHIP	1M	5% 1/10W	
R907	1-216-113-00	METAL CHIP	470K	5% 1/10W	
R908	1-216-113-00	METAL CHIP	470K	5% 1/10W	

< RELAY >

RY301	⚠ 1-515-678-11	RELAY

< SWITCH >

S101	1-572-890-11	SWITCH, HOOK
S281	1-554-061-00	SWITCH, SLIDE
S301	⚠ 1-572-257-11	SWITCH, HOOK
S302	1-554-123-00	SWITCH, SLIDE
S837	1-554-061-00	SWITCH, SLIDE
S838	1-554-123-00	SWITCH, SLIDE
S839	1-554-123-00	SWITCH, SLIDE
S840	1-554-061-00	SWITCH, SLIDE

< DISCHARGE >

SG101	⚠ 1-519-470-11	GAP, DISCHARGE
SG301	⚠ 1-519-470-11	GAP, DISCHARGE

Note: The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.

Ref. No.	Part No.	Description	Remarks
		< TRANSFORMER >	
T101	1-424-358-11	TRANSFORMER, LOW-FREQUENCY	
		< VARISTOR >	
VDR301⚠	1-808-420-11	VARISTOR	
		< CRYSTAL >	
X801	1-579-418-11	VIBRATOR, CRYSTAL 24MHz	
X802	1-579-066-11	VIBRATOR, CRYSTAL 4MHz	
**********			
*	1-641-907-11	UL BOARD	
		********	
		< CAPACITOR >	
C201	1-126-096-11	ELECT 10uF 20% 35V	
		< CONNECTOR >	
CN201	* 1-564-704-11	PIN, CONNECTOR (SMALL TYPE) 2P	
CN202	* 1-564-704-11	PIN, CONNECTOR (SMALL TYPE) 2P	
		< FILTER >	
LF101	1-424-102-11	COIL, LINE FILTER	
		< RELAY >	
RY101	1-515-867-11	RELAY	
**********			

Ref. No.	Part No.	Description	Remarks
		MISCELLANEOUS	
		**********	
26	1-572-731-11	SWITCH, RUBBER KEY	
37	1-542-152-11	MICROPHONE, ELECTRET CONDENSER	
LCD1	1-809-479-11	LCD UNIT (TM370)	
SP1	1-544-317-11	SPEAKER	
**********			
		ACCESSORIES & PACKING MATERIALS	
		**********	
	1-465-779-11	ADAPTOR, AC (US MODEL)	
	1-693-094-11	ADAPTOR, AC (Tourist MODEL)	
	1-550-690-11	TRANSMITTER & RECEIVER	
	1-590-276-24	CORD (WITH MODULAR PLUG)	
	1-690-529-11	CORD, CURL	
	3-349-508-01	CASE	
	3-372-080-01	PLATE, MEMORY	
*	3-372-280-01	INDIVIDUAL CARTON	
*	3-704-281-01	BAG, PROTECTION (STANDARD)	
	3-753-955-11	MANUAL, INSTRUCTION(ENGLISH, Tourist MODEL)	
	3-753-955-21	MANUAL, INSTRUCTION(ENGLISH, US MODEL)	
	3-753-956-21	CARD	
	3-753-957-21	CARD, REMOTE CONTROL	
	7-621-849-10	SCREW +P 3X14 TYPE4	
	X-3338-101-1	SCREW ASSY, TAPESTRY	
**********			

HARDWARE LIST

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#1	7-685-134-19	SCREW +P 2.6X8 TYPE2 NON-SLIT
#2	7-685-534-19	SCREW +BTP 2.6X8 TYPE2 N-S
#3	7-685-647-79	SCREW +P 3X10 TYPE2 NON-SLIT

Note: The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

9-956-660-12

Sony Corporation
Personal Telecommunication Group

English
92C1613-1
Printed in Japan
©1992.3
Published by Customer Relations and Service Group

IT-A4000

SONY
SERVICE MANUAL

US Model
Tourist Model

SUPPLEMENT-1

Revise your service manual as shown below to parts supply classification has been changed.

Page	CURRENT			REVISED		
	Ref.No.	Part No.	Description	Ref.No.	Part No.	Description
56				* CN901	1-573-664-11	HOUSING, CONNECTOR 22P
				* CN902	1-573-663-11	HOUSING, CONNECTOR 30P
				* CN903	1-573-666-11	HOUSING, CONNECTOR 14P

NOTE :
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

9-956-660-81

Sony Corporation
Info Com Products Company

English
94F0220-1D
Printed in Japan
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Published by Home A&V Products Div. Quality Engineering Dept.